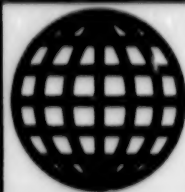


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25 SEPTEMBER 1989



**FOREIGN
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[The following are translations of selected articles in the Russian-language monthly journal SSHA: EKONOMIKA, POLITIKA, IDEOLOGIYA published in Moscow by the Institute of U.S. and Canadian Studies of the USSR Academy of Sciences. Refer to the table of contents for a listing of any articles not translated.]

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USA: Economics, Politics, Ideology

No 5, May 1989

Changing U.S. Views of Soviet Foreign Policy

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[Article by Anatoliy Ivanovich Utkin, doctor of historical sciences and lead scientific associate at Institute of U.S. and Canadian Studies: "The Foreign Policy of the USSR Seen Through the Eyes of the American Elite"; words in boldface as published]

[Text] The American leadership's views of Soviet foreign policy are undergoing changes. Contacts are being developed, and the Manichean, black-and-white view of the main counter-partner in the world arena—a view which sees only extremes of good and evil—is gradually losing strength. The search for a reasonable explanation for the changes in Soviet-American relations necessitates the disclosure of the main reason for this evolution. In our opinion, it could be the rapid change in U.S. interpretations of Soviet foreign policy motives.

The "Conspiracy" Theory

The variety of vantage points, ideological postures, historical stereotypes, and cliches employed by American analysts of Soviet foreign policy reveals **three basic theories**. The first is the stereotype of the "conspiracy," implying that the Kremlin has some kind of plan for foreign expansion and that this plan is constantly being updated. The supporters of this theory disagree on the time when this plan came into being. Some American political scientists see its ideological roots in the historical forgery known as the "last will and testament of Peter the Great." Historian R. Pipes, a man who is active in contemporary U.S. politics, does not, for instance, regard October 1917 as a turning point. He feels that tsarism's expansionist policy was resurrected in Soviet Russia, with some changes in its external features but not in its essence: Russia's centuries-old passion for expansion was revived, and the communists were carrying on the old tradition.

Others with stronger anti-Soviet feelings—including A. Ulam, who has been particularly active in recent decades—date the chronology of the "Moscow conspiracy" wholly within the Soviet era, viewing the Soviet leaders as parties to a conspiracy to undermine the capitalist world. This group is probably larger. They contrast the "red menace" to the more "restrained, understandable, and civilized" diplomacy of tsarism.

One of the classic works expounding on the "conspiracy theory" is "Protracted Conflict" by R. Strausz-Hupe, W. Kintner, J. Dougherty, and A. Cottrell. These political scientists feel that Moscow is involved in strictly coordinated and purposeful efforts to undermine the West and destroy the democratic regimes in the North

Atlantic region. Quotations are more eloquent than descriptions in this case. The goal of Soviet foreign policy, in the authors' opinion, is the "overthrow of all parliamentary governments in the world and their replacement with communist dictatorships under the centralized control of Moscow."¹ The prime mover of USSR policy is "a ravenous hunger for power and influence."² This stereotype presupposes an unconditional battle for survival. With this kind of enemy, the United States has no alternative: Traditional diplomacy, compromise, and agreement are out of the question. This view of Soviet foreign policy essentially refutes the need for diplomacy as such. If the other side is known to be an inveterate enemy, ready to make incredible sacrifices, the United States can only prepare for the worst.

This interpretation of Soviet foreign policy was particularly popular during the period between the world wars. During World War II the "Kremlin conspiracy" theory was discredited in Tehran and Yalta, where the Western leaders gained first-hand knowledge of the people responsible for making the main decisions in the USSR and of the decisionmaking procedure. It is not that the Western leaders suddenly "sympathized completely," but they did gain a better understanding of the Soviet leadership's decisionmaking procedure, the limits of the leadership's interests and abilities, its foreign policy apprehensions, its preference for personal contacts and strict centralization, and the reliability of the USSR as an ally. Roosevelt and Churchill saw that they could reach an agreement with Stalin.

The Soviet explanations of the need to secure Soviet borders bore little resemblance to what had been portrayed for two decades as a detailed program for the gradual subversion of the capitalist states in Western Europe, America, and other regions.

The "conspiracy" theory was set aside temporarily: It turned out to be impossible to blame all of the revolutionary changes in the world on covert operations masterminded by people in the Soviet capital.

The "Vacuum" Theory

The need for explanations, however, did not disappear. In the last months of World War II and the first year after the war, the voluminous reports of G. Kennan, then an adviser in the American embassy in Moscow, attracted the attention of politicians in Washington. This future U.S. ambassador to the USSR, diplomat and historian George Kennan, offered his interpretation of Soviet foreign policy. His ideas were widely known after an article entitled "The Sources of Soviet Conduct" and signed "X" appeared in the summer 1947 issue of FOREIGN AFFAIRS, the influential political journal. Kennan portrayed Soviet foreign policy as a physical phenomenon, acting spontaneously and to the limits of its ability, but without any evil intentions (or conspiracy). Just as water obeys the law of gravity and flows downhill, just as air fills a vacuum, the foreign policy of

the USSR, in Kennan's opinion, spreads its influence until it reaches a dam or is contained.

If we take a look at this from a more distant historical vantage point, we see that the supporters of the "physical" theory were repeating many of the opinions English historian G. Harrington expressed in 1660. He felt that states, despite all of their diverse features, fell into two categories: those expanding their boundaries and those preoccupied with retaining their existing territory.³ Guided by these mechanistic views, American political scientists tried to breathe life into these old theories 300 later. When C. Lerche discussed the origins of the "cold war" and Soviet foreign policy, he concluded that "the basic principle of international politics is that there are only two main types of strategic goals": the strategy of expanding influence and the strategy of defending existing influence. Lerche put the policy of the USSR in the first category. One of the founders of modern American political science, H. Morgenthau, agreed with him.⁴

It is easy to see the primitive basis of this line of reasoning. It does not seem possible to reduce all of the different types of behavior states exhibit in the world arena to a simple choice between "expansion" and "retreat," even when the most serious concessions have been made for the sake of theoretical clarity. The chief goal of most states, including the USSR, is the defense of national borders for the guarantee of security and of safer and more friendly surroundings, and not expansion or deliberate "self-containment." In the final analysis, the "physical" school of American political science was unable to develop a convincing and lasting cliché to explain Soviet foreign policy.

The "vacuum" theory was popular in the 1940's and 1950's, but it became a less and less satisfactory explanation for Soviet foreign policy in the 1960's and 1970's. Proceeding from the principles of the "physical" school and the "vacuum" stereotype, it is difficult to explain why it was the United States, and not the USSR, that crossed oceans after the war to gain a foothold in Western Europe and East Asia and established a diversified network of bases along the entire Soviet border by signing agreements with 42 countries. Who was filling the "vacuum" in this case? The argument that this was an American reaction to Soviet actions does not sound convincing to everyone. How can the "predisposition to fill a vacuum" be reconciled with the withdrawal of Soviet troops from Danish and Norwegian territory after World War II and from Iran in 1946, the renunciation of all rights to military bases in the PRC and Finland, and the withdrawal of Soviet troops from Austria? In this case the laws of physics did not serve Sovietology well, and the "vacuum" theory had to make way for new interpretations.

The "Education" Theory

A new stereotype, a third one, which could be called the "education" theory, took center stage in the 1970's. In line with this theory, part of the political elite in the

United States saw the USSR as something like a teenager with a bad upbringing who had to be rewarded for good conduct and punished for bad. The most enthusiastic apologists for this theory were H. Kissinger, the Republican administration's secretary of state, and M. Shulman, the Democratic administration's ideologist. The linkage of internal affairs with major international issues, such as the limitation of strategic offensive arms, was a distinctive feature of this American theory of the 1970's—the prevailing theory during the period of detente.

According to M. Shulman (people started paying more attention to his opinions when he was appointed Secretary of State C. Vance's special adviser on Soviet-American relations), the USSR could be more or less friendly and disposed to negotiations depending on circumstances.⁵ In line with this, Shulman (and the entire "education" school) advised the modification of the circumstances and terms of negotiation to bring out the "positive" features of Soviet foreign policy and minimize the "negative" (from the American vantage point) features.

The idea of "punishment or rewards" was apparent in a report published in May 1981 by the influential Council on Foreign Relations, "The Soviet Threat. Policy Guidelines for the 1980's": "The United States must convince the Soviet leadership that aggressive behavior can be dangerous and restraint can be beneficial."

The report recommended a new approach to trade with the Soviet Union. The president was advised to conclude general agreements with the USSR for a limited period of time, specifying the goods to be traded and the conditions of this trade. Furthermore, the agreements would be subject to periodic review by the president and the Congress. The fate of the agreements would depend on "how the Soviet Union behaves during that period."

Proceeding from their own standards and beliefs, which were frequently illusory, the supporters of the "education" theory were soon tripped up by the realities of this world, by the reluctance of those who were being "educated" to play the role of obedient pupils, and this brought about the quick collapse of this theory and caused difficulties and tension in bilateral contacts in the sphere of Soviet-American relations.

The Right Wing Prevails

By the end of the 1970's the prevailing opinion among members of the U.S. political elite was that liberal views could cause the quick and irreversible erosion of U.S. influence. A search for more appropriate interpretations of world events began. When the traditional liberal northeastern establishment, the chief source of the ideas which had guaranteed the pursuit of a rational foreign policy, lost its political influence, Reaganism began to offer the dominant interpretation of world events. The decline of the United States' relative importance in the world community was to be stopped by intensifying military construction, reducing government intervention

in the economy (Reaganomics), and promoting the oversimplified, black-and-white view of the world, including (and mainly) Soviet foreign policy.

The Reagan administration was made up of politicians with different and sometimes opposite points of view. This was particularly characteristic of the administration when it was first being formed, when all three schools—"conspiracy," "vacuum," and "education"—had their advocates in the upper echelons of the American leadership.

The State Department then advocated "education." Secretary of State A. Haig set forth his beliefs during his first months in office: He believed in linking "everything with everything." Even Soviet foreign policy in specific regions could be linked with strategic arms limitation talks.⁶

"Haig wanted NATO," a TIME magazine evaluation of the secretary of state's performance remarked, "to offer the Soviet Union the stick and the carrot simultaneously: He wants the United States to promise the resumption of arms control talks while the allies take a tougher line.... The U.S. secretary of state expressed support for the policy of 'linking' all aspects of East-West relations"⁷—i.e., the possibility of adjusting Soviet foreign policy to meet Haig's own specifications. The effort to impose his own rules was a salient feature of his diplomacy.

The State Department, however, was only one of the centers of Soviet foreign policy analysis. The Defense Department and C. Weinberger, the head of this department in the Reagan administration, took a stand which was quite different from that of the State Department. This interpretation of Soviet policy was based on the "conspiracy" theory. As soon as Weinberger took office, he said he was less likely than the secretary of state to believe in the effectiveness of reciprocal concessions, blackmail, and "barter" diplomacy. The Defense Department wanted to strengthen the U.S. military machine and did not trust the abilities of diplomats in dialogues with the USSR. Later, it became clear that this approach was closer to the president's own views.

In the final analysis, the views of the Republican administration of the 1980's took shape in an extremely fierce internal struggle. Secretary of State A. Haig left the administration in July 1982, and President Reagan had six different national security advisers during his 8 years in office.

When we take a look at the "producers of ideas," at the political scientists of the current decade, we have to say that the works of three American political scientists—R. Pipes, R. Luttwak, and Z. Brzezinski—had the greatest effect on the ruling elite's view of Soviet foreign policy. They analyzed the foreign policy of the USSR from the standpoint of the "conspiracy" stereotype. Furthermore, the first two particularly stressed the "centuries-old" nature of Russian expansionism. From the middle of the 16th century to the last quarter of the 17th century, Russia, according to them, acquired territory equal in

size to present-day Holland each year. The process was given extraordinary momentum, however, in 1917-1920, when, in Pipes' words, "there was the total annihilation of the upper and middle classes, which had been influenced most by the West.... This resurrected the Russia that existed before Peter the Great, a Russia with no Western trappings." Pipes has no doubts about the goals of Soviet foreign policy: "the global elimination of private ownership of the means of production and the 'bourgeois' order and its replacement with what Lenin called the world republic of soviets."

Pipes has angry words for those who fail to see the conspiracy he sees so clearly: "In a world where the United States has lost its status as a first-class power, the Soviet Union will have so many economic and military advantages that the opposition of any other 'socialist republic' will be unthinkable."⁸ We must not forget that this point of view was substantiated by the main expert on Soviet affairs (until May 1983) on President Reagan's National Security Council. But when could anything as incredible as the USSR prevailing over all of its neighbors and adversaries happen? Another political scientist, Z. Brzezinski, regards the end of the century as the crucial period: It is then that the "strategic front must be opened on the Rio Grande" (i.e., on the United States' southern border). It must be said that the cited work by Z. Brzezinski is an unparalleled example of pseudo-scientific theorizing accompanied by a profusion of maps and diagrams. The reader of Brzezinski's latest book learns that the "Red Brigades" in Italy, the "Red Army" faction in the FRG, the Basque separatists, the Irish Republican Army, and many others are supported by the USSR. "The Soviets' goal is the destruction of the world order," the former assistant to the president of the United States for national security affairs writes.

R. Luttwak tries to find a rationale for the "irrational behavior of the USSR"—its "unmotivated aggression"—and cannot find anything more convincing than the following: "Strictly speaking, motives and explanations are secondary: As soon as a society loses its balance and its leaders acquire the physical ability to make conquests, as soon as it has a military machine not confined to strictly defensive functions, motives and explanations are immediately found to make expansion more appealing and the cost and risk more acceptable."¹⁰ In other words, the existence of the physical means of influencing the outside world is too great a temptation in itself, and a state—the USSR in this case—cannot resist it. This creates the impression that the rightwing forces which rallied round the Reagan leadership in the United States (these were the right wings of both parties; in the Republican Party this is an ideological tradition dating back to B. Goldwater, and in the Democratic Party it is the position of ideologically intransigent people like former U.S. representative to the United Nations J. Kirkpatrick) had an urgent need for external stimuli for American self-assertion in the

world. They needed the "evil empire" so that they could mobilize the forces of American capitalism to fight against it.

When Reagan was still on the road to the White House, he was influenced by the interpretation of Soviet foreign policy as a "conspiracy" in the book by his close friend R. Cline (director of the Georgetown University Center for Strategic and International Studies, former deputy director of the CIA, and U.S. State Department director of intelligence and research), "World Power Trends and U.S. Foreign Policy for the 1980's." The author of this book, an anthology for the most part, has no difficulty defining the USSR's goals in the world arena: "to control the access to critical resources like oil, gas, and rare minerals, such as chromium, cobalt, and copper, in the Middle East, southern Africa, and Latin America." Cline describes the plan which is being carried out gradually by the group of strategists in the Kremlin. "It consists in accumulating influence wherever and whenever possible and aiding any movements weakening states regarded as hostile within the context of traditional Leninist doctrine."¹¹ In short, it is a policy of total and unhesitating enmity for anything alien in the world, directed from a single center and permitting no variations.

Reagan's general outlook and view of Soviet foreign policy when he was president were reflected in an interview he granted the *WALL STREET JOURNAL* when he first arrived in the White House: "We must not deceive ourselves. The Soviet Union is at the bottom of all lawlessness, wherever it occurs. If it were not playing this domino game, there would be no turmoil in the world."¹² At his first press conference President Reagan mentioned the "communist or socialist conspiracy," and 2 years after he took office he finally found the "perfect" metaphor for the USSR—the "evil empire."¹³ The emotional attachment many of the members of the Reagan administration felt for the "conspiracy" theory was based on their refusal to deal with the complexities of the contemporary international political situation and their hope of finding a quick and final solution to all of America's problems.

The Move Toward Realistic Assessments of the USSR After 1985

The "conspiracy" stereotype which was revived so quickly at the end of the 1970's successfully kept its status as the main stereotype in the United States until the middle of the 1980's. Its popularity began to wane in 1985. This occurred in spite of the fact that the administration in Washington was the most conservative since the days of President Taft and prided itself on its "inflexibility." It would take therapeutic measures of genuinely massive strength to normalize the situation and to "de-demonize" the skillfully engineered "enemy image." This return to sanity and to common sense did occur and it aroused the interest and sympathy of the world community. Soviet diplomatic actions to literally create a new image for the Soviet Union ranged from the

unilateral suspension of nuclear tests to unilateral conventional arms reductions. The Soviet leadership's actions after April 1985 no longer fit into the crustean bed of the prevailing U.S. theory.

There is probably no need to mention all of the Soviet initiatives of recent years in this article. The most important thing is that the image of the "conspiracy" that had been hatched by the Kremlin leaders is obviously inconsistent with the withdrawal of troops from Afghanistan, the determination to eliminate the most modern weapons, the consent to allow inspectors onto Soviet territory, the acknowledgement of imbalances in conventional arms, and the steps to correct them (for instance, the superiority in tanks). All of these actions helped to destroy the "conspiracy" stereotype more quickly and more effectively than years of mutual avowals of sincerity. The changes in our policy necessitated new interpretations of the nature and significance of Soviet actions in the world arena.

The American political elite has now reached a crossroads. The earlier common denominator—fear of the USSR as an enemy—is losing its strength. There is no explanation of Soviet policy that sounds convincing to the majority of people. The right wing of the political spectrum is still saying that the USSR's actions in 1985-1988 were a clever subterfuge, a "Potemkin village," and a carefully planned maneuver. This explanation, however, no longer satisfies the majority. Statements by many American diplomats and political scientists evince the real and valid worry that they are witnessing the collapse of a simple and convenient world, a world in which "containment" was the main goal of political activity for 40 years. The main uniting factor in the West—fear of the USSR—is growing noticeably weaker. And it is not simply a matter of the trillions of dollars taken out of the national treasury for unproductive purposes, but the loss of the *raison d'être* for U.S. leadership in the Western camp. This arouses panic in some people and anger in others: While they were preparing for war with the USSR, they lost the technological war to Japan. This is something new and frightening. The United States began carrying an excessive load in the second half of the 1940's. Only considerations of the highest order could justify this policy: the objective of national survival in the face of the Eastern adversary's expansion. Now this adversary's actions are literally demolishing an established stereotype in the United States. A more complex world is taking shape, and the new political thinking should serve as an aid in recognizing real changes. It must take the place of earlier stereotypes.

The summit meetings played their part. The paranoia began to subside. The oversimplified, primitive beliefs of rightwing Republicans, which had been officially sanctified, were encountering serious criticism within the country and from the United States' allies. The liberal segment of the establishment tried to put this stereotype in question on the grounds that a false view of reality could cause the United States to come into

conflict with it. One of the spokesmen of this critical current was leading contemporary historian A. Schlesinger, Jr. In his opinion, the "conspiracy" theory was based on a "serious misinterpretation of history. Turmoil existed in the world long before the Bolshevik revolution, and turmoil will continue to exist. Even if the Soviet Union did not exist, the war between Iraq and Iran would have started anyway, there would be no peace in Ireland, Cambodia, and South Africa anyway, and there would be a civil war in El Salvador anyway."¹⁴

The criticism of Reagan's oversimplified view strengthened the influence of opinions similar to the outlook of the realists of the 1960's and the advocates of detente in the 1970's.

Refuting Reagan's vision of a "conspiracy" in Soviet foreign policy, the spokesmen for a more realistic approach observed that "it was a mistake to portray the Soviet leaders as demons by denying their fear of war, their justified concern about security, and their recognition of the need to agree on a *modus vivendi* with other nuclear powers." The political scientists and historians who laid the basis for a more realistic approach in the 1970's are still winning theoretical debates with the argument that "short- and medium-range foreign policy-making in the USSR does not differ in any significant respect from policymaking in any other state."¹⁵ It appears that the blindness caused by the "conspiracy" theory is being corrected at the end of the 1980's. A more realistic view of Soviet foreign policy is evident in major works by R. Garthoff, S. Bialer, and J. Dean. After all, the value of any theory depends on its correspondence to reality, and this reality is the best exterminator of far-fetched ideological concepts. It is also apparent that the United States' allies, especially in Western Europe, are not at all willing to abide by the simple precepts and assumptions Washington invents. Difficulties in relations with the allies could serve as one of the key elements in the "education" of the new Washington elite and as an important motive for the rejection of oversimplified ideas.

Italy's *L'ESPRESSO* asked: "Are the efforts to uncover a 'Moscow conspiracy' anywhere and everywhere motivated by the hope of finding a single cause to explain the endless upheavals and instability in our world (i.e., everything the average American regards as an attack on his inherent right to peace and security) and to then eliminate this cause in a triumphant battle, after which the necessary order will finally be restored?" The skeptical feelings about this description of Soviet foreign policy were growing stronger throughout Reagan's years in office. The belief that blaming the USSR for all of the different developments on the international scene, such as the Palestinian problem, the Iran-Iraq war, the war for Namibia's independence, and the partisan activities in the Philippines, is "destined for defeat on the diplomatic front" is growing stronger in the United States and among its allies.¹⁶ At a press conference after President Reagan's visit to Moscow in June 1988, everyone wanted

to know essentially one thing: Was the President convinced that the "conspiracy" stereotype offers no reasonable explanation of Soviet foreign policy? President Reagan had to answer this critical question in the affirmative. In this case, reality turned out to be stronger than dogma.

The United States has been using a variety of methods to influence the USSR throughout the last 40 years: "containment" in the expectation that the Soviet system would change; the threat of "massive retaliation" in the event of the spread of Soviet influence; the "liberation" of Eastern Europe; the anticipation of the collapse of the social system in the USSR; the creation of a network of common interests; the efforts to bring about the economic exhaustion of the USSR; and the creation of a situation of military or technological superiority to the USSR. In this rapid succession of approaches, a common feature was the American hope of finding a quick solution to a troublesome problem. When we evaluate these approaches, we must agree with American diplomat J. Dean, who reminded his countrymen that there are problems for which there is no "quick solution." "The Soviet Union is the largest country in the world and it has colossal supplies of crude resources. The educational level of its population is constantly rising. The Soviet system might have weak spots, but there is no sign of its collapse. The real problem in American policy toward the Soviet Union is the United States' inability to acknowledge the permanence of the Soviet Union's existence as an equal partner and to draw the logical conclusion."¹⁷

The first, second, and third stereotypes have alternated throughout the 70-year history of the analysis of Soviet foreign policy. The new political thinking, a product of the contradictions of our time, promises a more rational relationship between the United States and the USSR.

We can draw several conclusions from this analysis of basic stereotypes. **First:** American foreign policy thinking has been dominated by a conservative and confused interpretation of the motives and nature of Soviet foreign policy for a long time. **Second:** In spite of some detours, an understanding of the "rational" nature of Soviet foreign policy as the opposite of odious, irrational rigidity is making some headway. **Third:** Neither blind opposition at every turn nor the attempts to force its own diplomatic rules on the USSR produced positive results for the United States even at the peak of American postwar strength. **Fourth:** The radical improvement of the USSR's foreign policy practices after 1985 is being opposed by the rightwing forces that encouraged "inertia" at the beginning of this decade and preferred hypercriticism to compromise. Healthy and strong Soviet-American relations must be based on the consideration of mutual interests; the pursuit of unilateral advantages will produce the opposite result. In the second half of this decade the Soviet side corrected its view of America in several respects. Now it is time for Washington to do the same.

Footnotes

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Economic Aspects of U.S. Microelectronics Revolution

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[Article by Viktor Borisovich Supyan, candidate of economic sciences and senior scientific associate at Institute

of U.S. and Canadian Studies: "The Scientific and Technical Revolution Today: Some Distinctive Features"; words in boldface as published]

[Text] The decade of the 1980's in the United States was marked by the development of the new phase of the scientific and technical revolution which is generally acknowledged to have begun in the second half of the 1970's. It has had a multifaceted effect on the development of U.S. productive forces.

Most Soviet and foreign researchers associate the commencement and development of this new phase of the scientific and technical revolution primarily with the widespread use of fundamentally new equipment and technology, mainly based on the use of microelectronics (microchips, large integrated circuits, and microprocessors), in various spheres of production and everyday life. A collective Soviet work published in 1987, for example, says that "the current phase of the scientific and technical revolution is distinguished primarily by the electronic automation of scientific and technical creativity itself, physical production, and the sphere of distribution and sales."¹ Many bourgeois researchers define this widespread use of microelectronic technology as the beginning of the third industrial revolution (regarding the industrial revolution of the 18th and 19th centuries as the first, and the first phase of the scientific and technical revolution, beginning in the middle of this century, as the second—V.S.). American researcher R. Ayers, for example, writes: "The revolution in microelectronics, including progress in computers, microprocessors, integrated circuits, software, automated design, and the first experiments with artificial intelligence, represents the generator of the third industrial revolution."² Columbia University experts E. Ginzberg, T. Noelle, and T. Stanback describe the current stage of scientific and technical development as a new phase of computerization based on microelectronic technology. They write, in particular: "A new phase of computerization began in the middle of the 1970's and included better data transmission systems, tremendous storage capacity, higher-speed computers, and user-friendly software."³

We could cite many more statements by Soviet and foreign researchers who regard the development of microelectronic technology as one of the decisive criteria of the current phase of the scientific and technical revolution, but there are also other points of view with regard to the timeframe and criteria of the new phase.

In general, when we analyze the current phase of the scientific and technical revolution, it is important to stress that it was not engendered solely by scientific achievements. It was made possible by certain economic and social changes which promoted the adaptation of scientific and technical achievements to social production and their mass dissemination. An important role here is played by the nature of competition (price and non-price), including international competition, the

speed of capital investment growth and investment patterns, the organizational and financial aspects of the innovation process (special programs, "venture capital," etc.), the evolution of the dimensions of firms and the variety of types of relations (the reduction of production concentration and the emergence of specific relationships—franchising and others), the developmental level of the country's infrastructure, and, of course, the qualitative transformation of human resources in the broadest sense of the term, including their skills, their education, and their social, sociopsychological, and cultural characteristics. On the whole, we could say that the development of the scientific and technical revolution depends on continuous qualitative changes in the productive forces of society on the one hand and meets the new requirements of society on the other while it is conditional upon the evolution of certain elements of production relations.⁴

We will attempt to categorize the most important features of contemporary scientific, technical and economic development in the United States, defined as the new phase of the scientific and technical revolution. In particular, on the level of science and technology, in addition to the appearance of new types of microelectronic equipment distinguished by unprecedented miniaturization and a colossal increase in the speed and volume of computer operations, significant achievements are taking place in genetic engineering and biotechnology, in the practical use of laser technology, and in the development of fundamentally new materials to meet specific requirements. All of this signifies considerable progress in various elements of productive forces, and especially in the tools of labor.

According to SCIENTIFIC AMERICAN, it was miniaturization that helped to lower computing costs by 20-30 percent a year for the last 30 years. Available forecasts suggest that the improvement of microchip manufacturing technology will sustain the current rate of miniaturization for the next 10 or 15 years. The most promising technology is thought to be x-ray lithography. It could increase the density of chip components from 20-fold to 40-fold. The speed of these processors will probably increase from 6-fold to 12-fold.⁵

The question of whether these changes in production technology are qualitative changes in the tools of labor is being debated in Soviet literature. Some authors feel that contemporary computerized automation represents only the "installation of controlling and regulating devices on the tools and means of labor"⁶ and that the tools of labor themselves do not change. This approach seems unjustifiably narrowminded. In his definition of a work machine, K. Marx proceeded from the assumption that this is "a thing or group of things the individual places between himself and the object of labor and uses to conduct his influence on the object."⁷ This definition proves that the tool of labor is not just, for instance, a chisel or a drill, but the entire machine or even the entire technology. The changes occurring at the present time under the influence of microelectronics are bringing

about qualitative changes in most of the technical and technical-economic characteristics of new production equipment and technology, namely the operating speed, readjustment speed—i.e., the flexibility of equipment—quality parameters, labor productivity, etc.

What is more, the qualitative changes in equipment and technology are affecting more than just the sphere of science and technology—i.e., the collection of scientific information and the development of experimental models. We could also speak of a new stage in the economic-technological development of social production or the gradual establishment of the new technological method of production in place of the still prevalent assembly line. Its main features coincide with the characteristics of the new phase of the scientific and technical revolution.⁸ At this time they are primarily reflected in the mass dissemination of new generations of production equipment and technology based on the use of microprocessors and on microelectronics in general. We can distinguish between five basic types of new production equipment: industrial robots, machine tools with numerical programmed control, flexible automated production units (usually including machining centers and robots), automated design systems (ADS), and combination ADS and machining centers. Sales of computerized automatic equipment in the United States amounted to 5 billion dollars in 1984. The figure is expected to reach 20-30 billion dollars by 1990. The sales of robots alone amounted to 443 million dollars in 1985 in the United States (world sales exceeded 4 billion dollars). This figure is expected to rise to 2 billion dollars by 1990, and to 4 billion dollars if sales of accessories are included. In 1985 there were 14,500 robots in the United States; by 1992 the robot production figure is expected to reach 37,700, and the total number is expected to reach 133,800.⁹

The ADS market has acquired impressive dimensions. In 1984, 80 percent of all world sales of this equipment were transactions by American producers, including such firms as Computervision (25 percent of all sales in the United States), IBM (21 percent), Intergraph (15 percent), and Calma G.E. (12 percent). The number of installed ADS exceeded 30,000 in the middle of the 1980's. The growth rate of the ADS sales volume has been exceptionally high: It was 71 percent a year from 1976 to 1981. As a result the sales volume increased from 70 million dollars to over a billion during this period. After a slight recession at the beginning of the 1980's in connection with the cyclical crisis, ADS production resumed its rapid growth, reaching 4.3 billion dollars in 1986.

The total number of machine tools with numerical programmed control represented around 5 percent of all machining equipment in the middle of the 1980's, but they are much more productive than the same quantity of other types of metal-working tools. The number of flexible automated systems is still low, but it is rising quickly. By 1987 there were around 60 of them, valued at over 250 million dollars. Total sales of computers in the

United States, including those installed on the FAS and other state-of-the-art equipment, exceeded 50 billion dollars in the middle of 1987, or 70 billion counting software.¹⁰

Research and development projects in automation have achieved impressive scales: Federal expenditures alone amounted to 80 million dollars in 1984. Estimates of the business community's expenditures range from 260 million to 400 million dollars.¹¹

Available estimates of the development of computerized automation are based on the assumption that microcomputers for electronic design will be used everywhere commercially by 1990, that FAS's will also reach this point by 1990, and that fully automated plants with automated design functions will undergo laboratory testing by 2000.

These data indicate that computerized automation is already a fact in U.S. production. The prospects for its dissemination seem even more promising. Furthermore, a fundamentally important feature of the new means of production is their flexibility—their ability to adapt to the rapidly changing needs of production and the population and to meet the needs of highly effective small-series production.

The second distinctive feature of the new phase of the scientific and technical revolution and the new economic-technological phase in production development (or the technological method of production) is its heightened scientific input. It is distinguished on the one hand by an overall increase in R & D expenditures and the improvement of spending patterns and research personnel and, on the other, by the establishment and delineation of a group of economic branches where the results of production are highly dependent on R & D expenditures. Total R & D expenditures exceeded 124 billion dollars in 1987, equivalent to 2.8 percent of the GNP and over 20 percent of total national economic investment. After a severe slump in the second half of the 1960's and the first half of the 1970's, the growth rate of R & D expenditures began to rise again in the middle of the 1970's and was measured at 5 percent a year from 1979 to 1984 (2.4 percent in 1973-1979).¹² The effective use of the human factor in R & D is exceptionally important. The United States has the highest number of scientists per 10,000 inhabitants in the capitalist world. It must be said, however, that much of the R & D in the United States is conducted for military purposes and that this, according to the admission of many American scientists, reduces the overall impact of scientific and technical potential. Obviously, R & D expenditures have always risen, but in the new phase of the scientific and technical revolution this is not just a matter of the quantitative growth of expenditures. The immediate effects of scientific knowledge and of education on social production are growing stronger. This influence is exerted during the innovation process, during the development of new products, and directly in production,

where a solid scientific background and highly qualified manpower are playing an increasingly important role.

A dynamic group of high-technology industries has taken shape in the United States. Depending on the criteria of scientific input chosen (percentage of personnel working with new technology, R & D expenditures in relation to sales volume, etc.), it includes from 5 to 48 branches of the American economy. The production of computers, communications systems, and electronic components, the aerospace and medico-biological industries, information services, and several other branches are usually included in this group.

The high-technology sector has displayed high rates of production and employment growth. If the classification criteria specify that proportional R & D expenditures in the sales volume and proportional scientific and technical personnel in employment figures must be equal to or higher than the average for the processing industry, there are 28 high-technology branches in this sector. In this case, as our calculations indicate, the high-technology sector's share of the net product of the processing industry exceeded 40 percent in the middle of the 1980's (31 percent in 1972), and its share of total employment was 34 percent (28 percent). Furthermore, this sector is affected much less by cyclical fluctuations. During the crisis period of 1980-1982, for example, employment decreased by 11.3 percent in the processing industry and by only 5.3 percent in the high-technology sector. Therefore, the sector has a definite stabilizing effect on the state of the economy during periods of recession, not to mention the fact that its products—state-of-the-art production equipment, computers, bio-engineering compounds, etc.—have a tremendous progressive scientific and technical impact on the entire economy.

We could cite several cases in which the technical modernization of traditional branches of the American economy was made possible only by the development of high-technology (primarily machine-building) branches. In the last 6 or 7 years, for example, the automotive industry has invested more than 50 billion dollars in new equipment and has substantially retooled the technical base of the branch. Active retooling is being conducted in the financial sphere. Citicorp, Merrill Lynch, American Express, and Prudential invested from 200 million to 250 million dollars a year in computer equipment in the first half of the 1980's. Bank of America announced its intention to spend 4 billion dollars on new technical equipment in the next 5 years.¹³

Obviously, the rise in the scientific requirements of social production in the United States has not been a steady process. It has been distinguished by all of the contradictions and disparities common to scientific and technical progress and economic development in the capitalist society. Above all, these include the militarization of science and the high-technology sector, the

uneven scientific and technical development of individual sectors, and the negative effects of the economic cycle.¹⁴

The third distinctive feature of the new phase of the scientific and technical revolution and of economic-technological changes in social production is probably the development of the colossal information infrastructure. Of course, information was always used and exchanged for production purposes, but the use of production information was generally confined to a single enterprise and the exchange of information was not a decisive factor in national economic development. The information infrastructure has now become a constituent and essential part of the entire production infrastructure, and the normal functioning of the economy is no longer possible without it.

A comprehensive data processing industry based on progressive electronic equipment is the foundation of the information infrastructure. In addition to producing computers and software, this branch develops devices for information transmission (communications equipment, "electronic mail," and others) and reproduction (copiers, computer printers, etc.), and accessories (displays and terminals). Besides this, it includes all of the services essential to the functioning of computers and other data processing equipment.

In the broadest interpretation of the branch (which would include the production of radio and television sets and all telecommunications services), its sales volume in 1987 was around 300 billion dollars, including over 50 billion dollars in computer sales, 22 billion in software sales, and 22 billion in fees for specialized information services. For the sake of comparison, the sales volume of the automotive industry that same year was 106 billion dollars.¹⁵

The information infrastructure took shape when data processing equipment of various types was integrated in information systems, which were then united in a network. The centers of this network are general-purpose computers.

The scales of the information infrastructure in the United States can be judged from the fact that 71,000 large computers were already operating in government establishments and private corporations in 1983, and the total number of personal computers reached 32.5 million in 1986 (with sales of 7.8 million PC's that same year). The number of national data banks, offering their clients information in electronic form on a commercial basis, is skyrocketing. Whereas there were only 400 in 1979, the number was already 2,800 in 1986. A new branch of the American economy—specialized computer services—also developed quickly during that period. Its operations volume increased from 3.4 billion dollars in 1972 to 21.8 billion in 1982.¹⁶ It is obvious that processes of this kind create fundamentally new opportunities for the functioning of all social production.

The fourth, and perhaps the most important, distinctive feature of the new phase of the scientific and technical revolution and of the new technological method of production based on it is a serious change in the **status of the individual** in production, a tendency toward the enhancement of his role as the main productive force. What is the evidence of this tendency and what caused it?

Above all, computerized automation changes the status of manpower in the production process considerably. The functions of the direct control of the tools of labor are transferred to the computer, while the individual is mainly engaged in general supervision and strategic decisionmaking.

More than ever before, manpower is visibly becoming the **main**, leading productive force in the true sense of the term rather than a constituent and subordinate part of the production system. Surveys conducted in developed capitalist countries indicate that from one-half to two-thirds of all workers performing intellectual and physical labor have more control over their own work.¹⁷

As a result of the substantial rise in the general scientific requirements of production, skilled employees, especially those engaged in intellectual labor, are acquiring special importance. Suffice it to say that they represent more than 55 percent of the total labor force. Highly skilled workers are also playing a more important role.

It is significant, however, that this is a matter of fundamentally new skills, and not just of higher skill requirements, in most labor categories. Workers, for example, are more likely to have to know how to use various software packages and to gauge the flow of information in the production system. All of this requires a much stronger background in mathematics, information science, and statistics than before. Two other new skills are also required—the ability to read the instruments regulating the production process and the ability to substantiate and make decisions on the regulation of the production process and changes in the routine.

The more widespread use of computerized technological systems will require more knowledge of the production process as a whole. In the past, during the period of mechanization and partial automation, the production process was divided into several relatively narrow (and frequently simple) operations, and the worker was not required to know anything about other areas of work. Now, however, the worker in a machining center is responsible for several phases of production and must know how his functions are related to the work of his colleagues.

The higher percentage of highly skilled manpower with new qualitative features is a result of the dynamic changes in social division of labor, one of the bases of which consists in the appearance of new types of labor—i.e., occupations and specialties—and the disappearance of old ones. The effects of social division of labor on the role and significance of the human factor, however, are

also reflected in the changing sectorial structure of the economy and patterns of employment and in the emergence of new spheres of employment. In this case the significance of the human factor in the economy is enhanced by a rise in the percentage of progressive branches and spheres of employment, which are generally distinguished by a high concentration of highly skilled manpower in intellectual and physical fields of labor. This is the rapidly growing high-technology sector of the economy, the production sphere of non-material forms of wealth and services.

The importance of the service industries from the standpoint of the use and mobilization of the human factor is not confined to the high concentration of highly skilled personnel (80 percent of all those performing intellectual operations).¹⁸ They are now playing an increasingly important role in the reproduction of the labor force, in personal consumption, and in setting the standards of the "quality of life." It appears that the role of the human factor in social production is being enhanced considerably by the heightened significance of non-material accumulations, namely scientific knowledge, education and skills, and the health of the population, the level and quality of which are affected directly by the scientific and technical revolution.

The personal needs of the individual are playing an important role in changing the status of manpower in social production in the contemporary capitalist society. The patterns of individual demand have undergone qualitative changes in recent decades. Just between 1970 and 1985 the proportion accounted for by services rose from 44.4 to 51.4 percent; the proportion accounted for by durable goods rose from 13.4 to 13.8 percent, while the figure for short-term goods dropped from 42.1 to 34.8 percent.¹⁹ (In 1950 services accounted for 32.8 percent of individual demand.) This is a reflection in the most general terms of changes in the consumer preferences of the American population and in its priorities and values. Surveys indicate that the most healthy work ethic—i.e., the most responsible attitude toward work—and the greatest chance of realizing it are found in the segment of the labor force assigning priority to self-assertion and expressing a high demand for education, culture, recreation, and other such services. The work ethic of 70 percent of the members of this group meets the highest requirements, whereas only 52 percent of all workers display this kind of attitude toward work.²⁰ Therefore, the nature of workers' demands has a considerable effect on their contribution to total labor and, consequently, on their role and significance in the production process.

In addition to changes in the patterns of demand, the degree of their satisfaction also plays an important role in the individual's attitude toward work. Many sociological surveys have demonstrated the strong connection between the level of satisfaction of various demands and the indicators of labor productivity, production activity, and initiative. Furthermore, as the basic needs of the individual are satisfied, requirements of a non-material

nature acquire increasing significance. Obviously, the satisfaction of many demands is still at a relatively low level for large segments of the population. This is naturally impeding the full realization of the labor potential of this part of the labor force.

It is also significant that the changes in the patterns of personal demand in favor of non-material forms of wealth and services and durable goods and the general tendency toward a higher percentage of more complex demands, particularly spiritual needs, are contributing to the development of an active and creative labor force. These processes are also affecting the value of manpower, although it is becoming more difficult to estimate, in spite of a clear upward trend. The complexity of these calculations stems primarily from the fact that the degree of correspondence between the price and value of manpower becomes less and less dependent on market factors as the scientific and technical revolution progresses. The higher skills of workers as a whole have led to a situation in which labor which is not measured in work hours is becoming more significant. Although there is an indisputable tendency toward the enhancement of the value of manpower, the upper limit is becoming indistinct and uncertain. As a result, the higher value of the labor of certain groups of employed individuals is frequently not reflected in the price of this labor.

Therefore, there are several new qualitative trends in the development of productive forces, and especially in manpower, as well as in the scientific-technical and economic-technological development of the United States. These trends, however ambiguous and contradictory they might be, represent, in our opinion, the main distinctive features of the new phase of the scientific and technical revolution and simultaneously constitute a basis for the gradual establishment of the new technological method of production.

Footnotes

1. "Kapitalizm na iskhode stoletiya" [Capitalism at the End of the Century], edited by A.N. Yakovlev, Moscow, 1987, p. 54.
2. "The Next Industrial Revolution: Revising Industry Through Innovation," Cambridge (Mass.), 1984, p. 141.
3. E. Ginzberg, T. Noelle, and T. Stanback, "Technology and Employment: Concepts and Clarifications," Westview Press, 1986, pp. 1-13.
4. Obviously, this does not mean a change in the fundamental relations of ownership of the means of production. During the process of adaptation to developing productive forces, however, certain elements of capitalist production relations undergo definite changes. This applies to specific forms of organization, the financing of production and science, participation (limited) by workers and employees in production management, and changes in distribution relations.

5. SCIENTIFIC AMERICAN, October 1987, vol 257, No 4, p 7.

6. See, for example, "Periodizatsiya nauchno-tekhnicheskoy revolyutsii. Nauchno-analiticheskiy obzor" [The Division of the Scientific and Technical Revolution into Stages. Analytical Survey], Moscow, 1987, p 20.

7. K. Marx and F. Engels, "Works," vol 23, p 190.

8. The technological method of production can be described as the unification and interaction of productive forces, the structure of social production, and various forms of economic-technological organization.

9. "Computerized Manufacturing Automation. Employment, Education and Workplace," Washington, 1984, pp 53, 269; "1987 U.S. Industrial Outlook," Washington, 1987, p 21-6.

10. "1987 U.S. Industrial Outlook," pp 21-5, 21-7, 28-1, 28-2.

11. "Computerized Manufacturing Automation," p 46.

12. "Statistical Abstract of the United States 1988," p 558; a detailed analysis of the distinctive features of scientific and technical development in the United States in the 1980's is presented in V.M. Kudrov's chapter "Scientific and Technical Progress: Scales, Directions, and Contradictions" in the monograph "American Capitalism in the 1980's," edited by G.Ye. Skorov, Moscow, 1986.

13. E. Ginzberg et al, Op. cit., pp 1-16.

14. For more detail, see "American Capitalism in the 1980's," pp 167-175.

15. "1987 U.S. Industrial Outlook," pp 28-1, 28-2, 29-1, 30-1, 31-1, 47-1, 36-1.

16. "Statistical Abstract of the United States 1987," p 769.

17. D. Yankelovich et al, "The World at Work. An International Report on Jobs, Productivity and Human Values," New York, 1985, p 30.

18. It is significant that the largest zones of semiskilled labor are also concentrated in the service industries.

19. Calculated according to data in "Statistical Abstract of the United States 1987," p 417.

20. D. Yankelovich et al, Op. cit., p 51.

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Cuban Missile Crisis: 'Attempt at Modeling'

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[Article by Vladimir Pavlovich Akimov, candidate of physico-mathematical sciences and senior scientific associate at Institute of U.S. and Canadian Studies; Vadim Borisovich Lukov, candidate of historical sciences; Pavel Borisovich Parshin, candidate of philological sciences and senior scientific associate at Institute of U.S. and Canadian Studies; and Viktor Mikhaylovich Sergeyev, candidate of physico-mathematical sciences and head of Institute of U.S. and Canadian Studies laboratory: "Caribbean Crisis: Attempt at Modeling"]

[Text] It has been more than a quarter of a century since the Caribbean missile crisis—the moment of the greatest tension in USSR- U.S. relations in all of the postwar decades. In October 1962 the two greatest military powers came closer than ever before or since to the verge of the nuclear abyss and were able not only to stay on this verge, but also to take a few steps backward, away from it. Now that this abyss has become immeasurably deeper under the weight of the much larger quantity of nuclear warheads and much more sophisticated delivery systems than in the beginning of the 1960's, the political significance of the negative experience of sliding to the dangerous verge and the positive experience of moving away from it is indisputable, especially now that "our complex and multifaceted world is becoming increasingly interconnected and interdependent" and any movement within it necessitates a complete awareness of the consequences of these moves. The lessons of the Caribbean crisis are exceptionally important: in this context. The study of this crisis can shed light on the gradual acknowledgement of interdependence in the military-strategic sphere and reveal the processes that gave birth to the first glimmers of the "new thinking" in the approach to the problems of curbing the nuclear arms race and regulating strategic stability.

The drama of the Caribbean crisis and the political significance of the problems arising during its discussion, combined with the thorough documentation of the event,² have made the study of the Caribbean crisis something like a "proving ground" for various approaches and new methods of analyzing and explaining the political process.

A traditional historical analysis, based on the detailed study of specific events, does not raise, and essentially does not secure the very possibility of raising, some general and fundamental questions for which the events of October 1962 could provide extremely valuable answers. These questions include, for example, the following: What is it about a specific historical situation that defines it as an international crisis? Which aspects of a crisis situation have the greatest influence on its outcome? How can changes in various parameters of the situation influence the development of the crisis? An

analysis by a American scientist who tries to answer questions of this kind, single out the common features of crisis situations, explain their development, derive political lessons from this and, finally, develop practical tools to forecast the start and duration of crises must presuppose a study of historical alternatives.³ This opportunity is known to be provided by the simulation method, securing (with all of the obvious reservations regarding the "absence of a subjunctive mood in history") something like the experimental verification of hypotheses concerning the logical patterns of the development of crises and now used widely in investigations of sociopolitical processes.⁴

Simulation Models in Sociopolitical Research

What kind of new information can simulation provide in the study of political situations? There are two aspects of analysis in which the use of simulation models produces clear advantages.

The first aspect is the heightened objectivity of research. Traditional historical and political analyses are based largely on the study of texts by an expert. Conclusions depend on the qualifications of experts and are therefore quite likely to diverge perceptibly. Besides this, experts do not have the conceptual tools for an explicit analysis of the text: Their conclusions are based to a considerable extent on intuition and on a tremendous amount of personal experience. The development of formal methods of analyzing texts, on the other hand, makes these conclusions more objective and accessible to criticism and comparison.

The second important aspect of analysis in which simulation can produce significant results is the disclosure of general trends and the development of a system for the classification of political situations. This kind of classification is impossible without preliminary "objectivization" standing up to scientific criticism, and the "expert" approach verges too often on the subjective.

Which tools were chosen in this work for the construction of a model of the crisis situation? It seemed important to us to consider two fundamental levels of any political situation—the level of action and the level of the political leadership's assumptions with regard to the situation.

On the basis of a study of the action—i.e., series of events—we reconstructed the conflict in the form in which it is usually examined in theoretical works.⁵ We reconstructed the theoretical game matrix of the conflict; i.e., a table in which the alternative policy lines of the two sides—"conflict" and "cooperation"—are situated horizontally and vertically, with two sets of figures in the resulting squares—the hypothetical advantages or disadvantages of the pursuit of these policy lines.

The second stage of our analysis entailed reconstruction with the aid of a detailed formal analysis of the texts of political declarations. During this process, only one of the many relationships between the different positions

combining to make up a specific political situation was singled out—the quasi-causal relationship of influence (positive or negative). The result of this kind of analysis is the so-called cognitive chart⁶—a formal structure reflecting the author of the text's view of the world (see diagram in appendix). This cognitive chart can be used to model the author of the text's assessment of various political alternatives.

The procedures for the construction of this kind of model were proposed and tested during the simulation of the decisionmaking process in crisis situations by Otto von Bismarck and other political leaders of the German Empire in the second half of the 19th century and the beginning of the 20th.⁷ The use of this kind of model presupposes the supplementation of the cognitive mapping tools with calculations of the relative weight of causal connections. The authors used the methods of content analysis and unofficial substantive observations for this purpose. For example, if a specific political variable is influenced by several other political variables, the weight of the influence of each is considered to be directly proportional to the percentage volume of the excerpts of text in which this variable is mentioned, as long as its importance is not assessed directly by the author of the text, as in the case, for example, of the "U.S. inaction" variable, in reference to which J. Kennedy's address to the nation of 22 October 1962 says that the failure to take action would be the greatest danger of all. Consequently, this causal connection is given a value of 51 percent—i.e., more than half.

The result of this stage of modeling is the construction of a cognitive chart with relative values, or a **balanced activation graph**—a structural depiction of the state of the world in connection with positive, negative, and neutral reciprocal influences of varying strength (see the diagram in the appendix for an example). On the dynamic level this structure can be viewed as a system of interrelated possibilities with a specific set of "entrances"—i.e., heights to which none of the arrows rise (these heights represent environmental factors and alternative political actions in the model; each height can be realized through the "inclusion" of the environmental factor and/or political action)—and "exits"—the highest values and/or interests, the realization of which can be judged by the final influence of realized heights on them.

By changing the realization of "entry" heights and thereby simulating a change in the political situation, we can derive different "waves of actualization" at numerous heights and analyze how a particular situation—i.e., combination of initial possibilities—will influence the group of interests represented by the author of the political program being analyzed.⁸

This kind of model presents a detailed description of how the participants in the situation assess the probability of the attainment of their goals depending on the occurrence of various circumstances. It also simplifies the study of the interdependence of goals pursued by opposite sides in the crisis. This makes it possible to

check the structure of the strategic game matrix (i.e., a matrix with only two alternative actions or moves for each side—conflict vs. cooperation) derived with the aid of experts, or reconstructed, as in our study, from a series of events. Finally, the researcher also derives a graphic and complete depiction of the **reflexive structure of the situation**—i.e., the participants' view of one another's goals and interests.

Caribbean Crisis. Structure and Evolution of Situation

The structure and evolution of the situation during the period of the Caribbean crisis can be analyzed by reconstructing theoretical game matrices for the interpretation of the sides' actions during the crisis. The body of information describing the interaction of the United States and the USSR from July 1960 through January 1963 was used to analyze the dynamics and structure of the series of events. This body of information, covering 39 actions by the two participants, was compiled on the basis of Soviet and American sources.⁹ The analysis resulted in the choice of 12 of the sides' actions as the basic elements. The list of these actions represents a brief outline of the Caribbean crisis.

1. J. Kennedy decides to escalate subversive activity against Cuba (April-May 1962).
2. July 1962—USSR and Cuba conclude agreement on deployment of intermediate-range nuclear missiles in Cuba.
3. 22 October 1962—U.S. ABM systems begin to be transferred to southeastern zone; U.S. naval exercises in Caribbean begin.

4. 22-26 October 1962—United States announces and enacts "quarantine" of Cuba.

5. 25 October 1962—armed forces of USSR and other Warsaw Pact members are put on alert.

6. 26 October 1962—N.S. Khrushchev sends first message to J. Kennedy.

7. 27 October 1962—N.S. Khrushchev sends second message.

8. American side accepts terms in N.S. Khrushchev's message of 26 October 1962.

9. 27 October 1962—U-2 plane is shot down over Cuba.

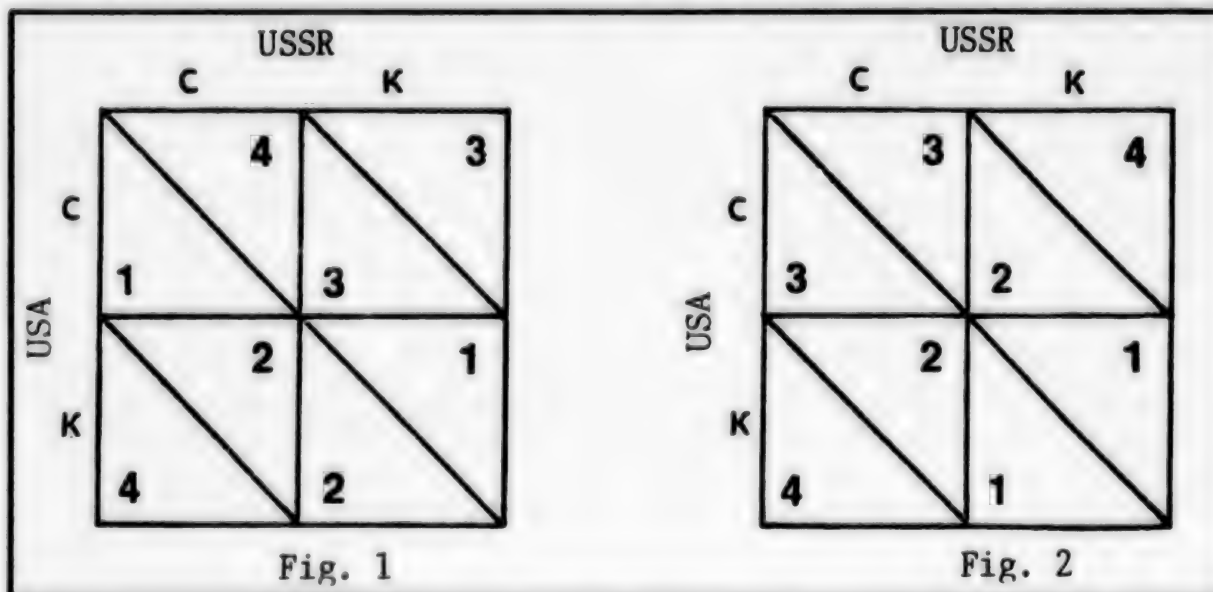
10. 28 October 1962—Soviet side informs United States of willingness to remove missiles from Cuba.

11. 20 November 1962—United States lifts "quarantine" of Cuba.

12. 7 January 1963—Joint U.S.-USSR letter to United Nations requests removal of Caribbean crisis from Security Council agenda.

All of these actions were classified as conflictive or cooperative moves. After analyzing sections of varying lengths of the sequence of events, we can reconstruct the dependence of the structure of the situation, illustrated in the theoretical game matrix, on the time frame. A computer program analyzing the series of events at each moment of the crisis produced the probability pattern based on a set of 576 strategic matrices.¹⁰

The most important results of the analysis were the opportunities to use the data derived to verify proposed methods and procedures of studying the structure of the crisis. To this end, the reproduced series of strategic matrices was compared to the actual evolution of the



Key: C—strategy of cooperation; K—strategy of conflict in matrix of hypothetical advantages

crisis. After an analysis of the matrices, we were able to identify three "turning points" in the development of the situation:

the moment when the United States accepted the terms of settlement specified in N.S. Khrushchev's first message to J. Kennedy (see the matrix in Figure 1);

the moment when the "quarantine" of Cuba was lifted;

the moment when the joint U.S.-USSR letter was sent to the United Nations to request the removal of the Caribbean crisis from the Security Council agenda (matrix in Figure 2).

As we can see, these turning points correlate directly with the actions that a traditional content analysis would interpret as the deciding factors in the development of the Caribbean crisis.

When we summarized the results of the analysis of strategic matrices, we were able to categorize the strategies the sides used in four groups:

- 1) escalation strategy (E);
- 2) de-escalation strategy (D);
- 3) combination strategy with prevalence of escalation elements (E/D);
- 4) combination strategy with prevalence of de-escalation elements (D/E).

The distribution of the strategies used by the USSR and the United States at certain moments in time is presented in Table 1. This table graphically portrays the presence of a stable tendency toward the de-escalation of the crisis by the USSR throughout the time frame depicted in the table; the United States displayed this tendency after 27 October 1962.

Table 1. Distribution of Strategies of Sides at Certain Points of the Caribbean Crisis

Dates	USSR	United States
18 October 1962	D	E
26 October 1962	D	E
27 October 1962	D	D
20 November 1962	D/E	D
1 January 1963	D/E	D/E

E—escalation;

D—de-escalation;

D/E—combination strategy with prevailing tendency toward de-escalation.

The situation at the time when the crisis reached maximum intensity (26 October 1962), can be reconstructed in the form of a matrix presupposing the escalation of the

conflict by the United States (Figure 1);¹¹ the most probable matrix at the time of the settlement of the crisis is presented in Figure 2, a matrix well known from theoretical works on conflict research and referred to as the game of "chicken" in Western works.¹² The main feature of this theoretical game matrix, as experimental studies demonstrated, is the fact that during numerous repetitions of the game, the participants choose the cooperative strategy only when their resources are comparable. When one side's resources are limited in comparison with the other's and when the conflict means more to the side with more resources, it can employ prolonged non-cooperative behavior to force the partner to choose the cooperative strategy and to "exploit" him, so to speak.

An examination of the dynamics of the reproduced strategic matrices could lead—if we confine ourselves to the traditional criteria of theoretical games—to extremely pessimistic conclusions. After all, the last matrix of crisis interaction is distinguished by sharply conflicting priorities—i.e., the sides "have learned nothing," at least on the surface. Is this true? To answer this question, we can look at the results of a simulation of the patterns of conflict thinking. In this work we will examine the thinking of the U.S. leadership, primarily President Kennedy, with the intention of analyzing the position of the USSR in the future.

Analysis and Simulation of Political Thinking of U.S. Leadership Before and During Caribbean Crisis

The previously described theoretical approach to the study of political texts was used for an analysis and (partial) computer simulation of the political thinking of President Kennedy before and during the Caribbean crisis. This entailed the following stages:

the reproduction of Kennedy's view of the strategic situation prior to the crisis;

the reproduction of Kennedy's view of the series of tactical situations in September–November 1962 to determine the nature of changing patterns of thinking;

the computer simulation of Kennedy's perceptions of one tactical situation (on 22 October 1962).

First we will take a look at J. Kennedy's "long-range" view of the strategic situation prior to the Caribbean crisis.

An analysis of the cognitive chart based on J. Kennedy's statement in the U.S. Senate on 14 June 1960 (when he was still a senator) allows us to draw several conclusions with regard to the long-range assessment of the development of the international situation and the strategic goals of the United States, which presumably influenced the American leadership's perceptions of the subsequent crisis in American-Soviet relations.

In J. Kennedy's view, the international political situation over the long range would be such that its development could be controlled with the aid of the resources the United States already had.

The distinctive features of J. Kennedy's thinking during this period were: (1) the conviction that available resources were sufficient for the virtually complete regulation of the environment; (2) the lack of a thorough analysis of the structure of the environment as something "unwarranted"; and (3) a developed system of goals to be attained simultaneously.

The structural position of the environmental factors portrayed in the cognitive chart (it is too large to reproduce in this work) precludes the appearance of "crisis clusters"—i.e., situations in which the effects of one factor can simultaneously jeopardize several important U.S. goals. Each factor is neutralized by ongoing or projected government actions.

In terms of their impact on the system of goals, primarily the highest goal ("U.S. security"), negative factors can be defined as the main potential threats to U.S. national security. These factors could have had an effect if the United States had not taken countermeasures.

Kennedy included the following among the main potential threats to national security:

the possibility of a Soviet first strike against the United States as a result of the vulnerability of American forward-based forces;

non-nuclear aggression against the forces of the United States and its allies;

political instability (or chaos) in developing countries and, as a result, the more intense "infiltration" of these countries by the USSR and PRC.

An analysis of the cognitive chart provides grounds for the conviction that in summer 1960 J. Kennedy would have judged the scenario of events in the Caribbean crisis as highly improbable and would probably have called the information about the actions of the USSR and Cuba implausible.

The following facts support this conclusion:

a) the "mounting nuclear threat" from the USSR (this is precisely how American leaders interpreted the Soviet side's moves to strengthen Cuba's defensive potential, including the deployment of intermediate-range missiles and IL-28 bombers in Cuba) is connected on the cognitive chart with only one factor—the increasing vulnerability of American forward-based systems in Western Europe;

b) the so-called "communist infiltration of developing countries"—i.e., the development of cooperation by the countries of this group with the Soviet Union and the PRC—is not connected in the diagram with the factor posing the greatest threat to the United States—the increasing danger of a Soviet first strike. In other words, the combination of the two threats was not treated as a real possibility in the American President's statement;

c) the Caribbean zone, just as all of Latin America, was not regarded by J. Kennedy as a probable zone of a local conflict involving the USSR and posing a threat to the United States. The most probable theater of this kind of conflict was, according to U.S. ruling circles at that time, the Middle East.

The conclusion derived from the analysis of the cognitive chart, that the actions of the USSR and Cuba in summer and fall 1962 would have to have been a surprise to J. Kennedy, is confirmed by facts.

An intelligence assessment drawn up by the CIA in spring 1962 said that the deployment of nuclear weapons in Cuba was highly improbable. According to the Stennis Commission (formed as part of the Senate Committee on the Armed Services to investigate the reasons for the American intelligence community's inability to gain advance knowledge of the deployment of missiles in Cuba), U.S. intelligence agencies did not trust the reports of refugees from Cuba and ignored them because they based their thinking on the "philosophical conviction," common in the intelligence community, that the deployment of strategic missiles in Cuba would be inconsistent with Soviet policy.

The cognitive chart indicates a number of the standard crisis strategies Senator Kennedy proposed in June 1960 (see appendix).

A. Strategy of Action in Crisis Connected with Internal Political Instability in a Developing Country (or Group of Countries)

The overall situation meets the following description:

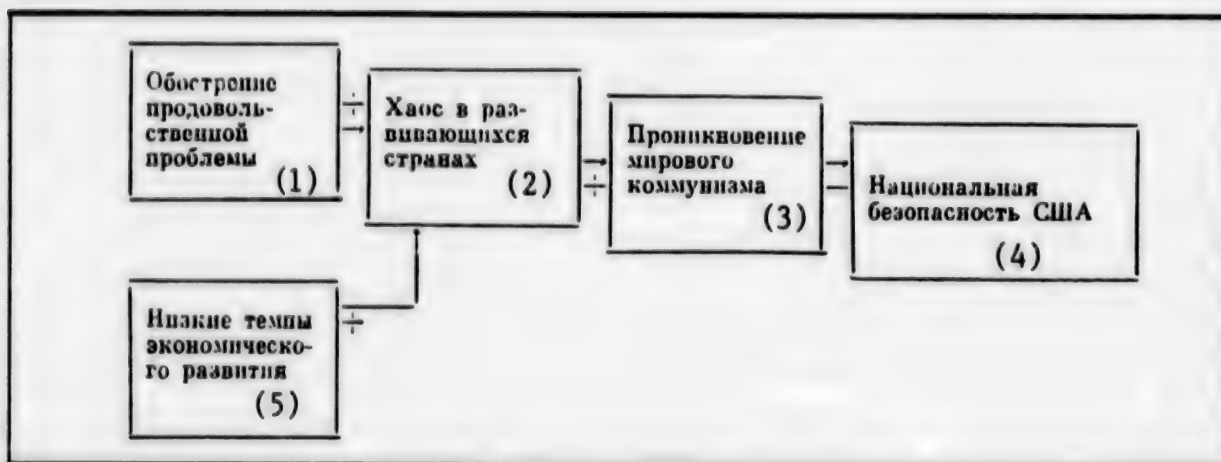
This was clearly regarded as a universal strategy because J. Kennedy felt it was equally applicable (with minor adjustments) to situations in Asia, Africa, and Latin America. Furthermore, it effectively served as a substitute for the analysis of specific political situations in developing countries, suggesting that the American leadership of that time regarded political development in this group of countries as a direct function of the state of their economy.

A genuine threat of this kind (i.e., chaos in developing countries) would have signified a situation dangerous over the long range but posing no direct military threat to the United States. The American leadership's probable reaction would have been a long-range program of the following type:

B. Political Instability in Developing Country Combined with Local Conflict (Non-Nuclear Aggression)

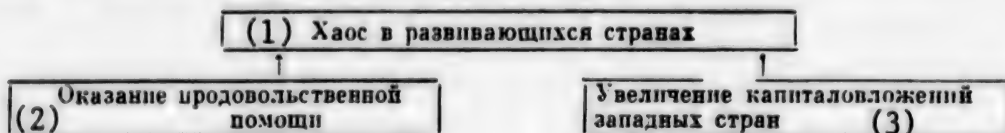
In this situation there would already be two threats, and one would be of a military nature and would jeopardize the interests of the United States or its allies. J. Kennedy's speech outlined an optional strategy for this kind of situation:

The existence of ready-made "winning" strategies for these situations and the lack of analysis of any other



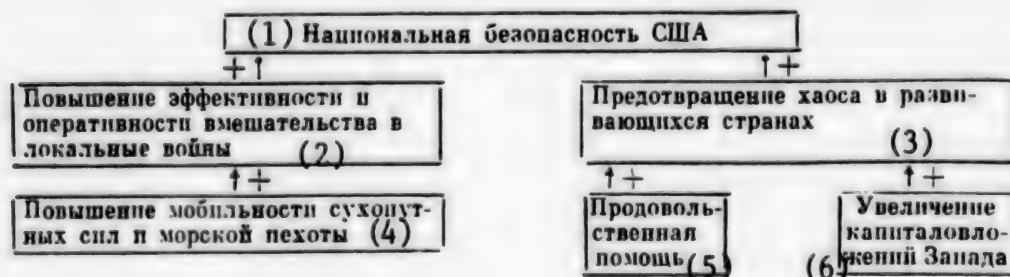
Key:

- | | |
|------------------------------------|--------------------------------------|
| 1. Exacerbation of food problems | 4. U.S. national security |
| 2. Chaos in developing countries | 5. Low rates of economic development |
| 3. Infiltration by world communism | |



Key:

- | | |
|----------------------------------|---|
| 1. Chaos in developing countries | 2. Offer of food assistance |
| | 3. Increase in Western capital investment |



Key:

- | | |
|---|---|
| 1. U.S. national security | 4. Heightened mobility of Army and Marine Corps |
| 2. More effective and productive intervention in local wars | 5. Food assistance |
| 3. Prevention of chaos in developing countries | 6. Increase in Western capital investment |

scenarios are apparently what gave J. Kennedy the sense of total control over the political situation on the global level—i.e., the illusion (as it later turned out to be) that the United States was completely independent of the vicissitudes of fate. This illusion was one of the main reasons that the President of the United States chose the strategy of the escalation of aggressive actions against Cuba in 1961 and 1962.

Kennedy's speeches of 4 and 13 September 1962 (cognitive charts omitted) present a striking contrast. During this period there were serious changes in the President's thinking. His view of the world was confined to an analysis of the Cuban situation. It was as though the two

factors threatening U.S. interests had been superimposed on the situation—"a nuclear threat from the USSR" and "instability in Third World countries." The factor of interdependence intruded for the first time into the President's view of the world. This change was accompanied by intense efforts to understand—probably also for the first time—other participants in the situation and to influence their view of the world. It is interesting, incidentally, that this was fully true only of the USSR: There were obvious attempts to convince the political leadership. As for Cuba, here we see only propaganda addressed to the Cuban people. The government was ignored. This position in relation to the Cuban leadership was a factor which seriously complicated the settlement of the crisis.

Finally, a qualitative change in the American leadership's perception of the situation had taken place by 22 October 1962, as an analysis of J. Kennedy's address to the nation demonstrates (see appendix). In essence, this change was a **restructuring** of political thinking patterns.¹³

An examination of the cognitive chart presented in Diagram 1 reveals clear symptoms of crisis thinking:

1. The ratio of controllable to uncontrollable factors was 6:43—the most unfavorable ratio for the United States during the entire crisis period.

2. Several developed crisis clusters appeared in the President's view of the situation—structures formed by the compounded negative influence of one factor of the situation on higher factors or U.S. goals. The most important crisis cluster, from the standpoint of U.S. interests, is the structure with "Cuba's transformation into a strategic base of the USSR" at its basis. A second major cluster—"the political domination of Cuba by the USSR"—is of secondary importance in the chart.

3. The President's address contained a more sweeping analysis of the situation itself than earlier documents (the goals of the USSR, its capabilities, the situation in Cuba, and the consequences of various U.S. actions), although in an extremely tendentious form in relation to the Soviet side's motives for action. When the role the analysis of the political environment plays in the 22 October speech is compared to the role of the assessments of the situation presented on 4 and 13 September, the fundamental difference between them becomes obvious: In the first case the environment clearly had its own logical patterns of development and could play an active role, while U.S. actions could have consequences undesirable for the American side itself, whereas in the second case the environment constituted only the background of the American leadership's actions, and its development was completely under the control of the United States.

On the basis of the cognitive chart derived from the text of J. Kennedy's address to the nation on 22 October, the

authors employed some methods of artificial intelligence to construct a formalized model of the American leadership's perception of the crisis situation.

The purpose of this model was the disclosure of the most important, from the standpoint of the American leadership, environmental factors, including elements of USSR behavior in the crisis, and a quantitative assessment of the effectiveness of official U.S. moves in different variants of the development of the situation. These variants were portrayed in the model by including different combinations of environmental factors and alternative political actions.

The simulation process revealed the environmental factors the American leadership perceived as determinants of the subsequent development of events during the period in question: These were the presence of "sincerity" and "restraint" in the USSR's actions. Correspondingly, elements of the partner's behavior signaling the presence/absence of this kind of "sincerity" and "restraint" were apparently employed by U.S. ruling circles as indicators for the assessment of possible future developments in the situation at that time.

The future development of the crisis was envisioned by the American leadership in two scenarios:

the absence of "sincerity" and "restraint" in the USSR's behavior;

the display of "sincerity" and "restraint" by the Soviet side.

In the first variant the American-Soviet conflict, in the opinion of the U.S. leadership, could lead to a situation in which U.S. goals could be secured only through the further escalation of the crisis beyond the bounds of the American side's declared intentions. This conclusion with regard to the White House assessment of the prospects for the first variant is supported by two results of computer analysis: first, in this variant U.S. concessions do not contribute to the attainment of the main U.S. goals; second, even the use of all the measures listed in J. Kennedy's address would not guarantee the attainment of the main U.S. goals in the crisis.

Table 2. Dependence of Realization of U.S. and USSR Interests and Goals on U.S. Countermeasures, %

Inclusion of external factors	Escalation of countermeasures		1+2+5	1+2+5+6	1+2+5+6+7	All countermeasures
	1	1+2				
U.S. interests in absence of USSR "sincerity" and "restraint"	5	35	35	35	35	35
U.S. interests in presence of USSR "sincerity" and "restraint"	U.S. prestige 27	U.S. prestige + security of Western Hemisphere 60	60	60	98	98
USSR interests in absence of USSR "sincerity" and "restraint"	U.S. prestige + peace and security of world community 5	5	5	5	5	5
USSR interests in presence of USSR "sincerity" and "restraint"	5	100	100	100	100	100

Content of countermeasures described in element 38 of key to Diagram 1 (see below).

The American leadership's perception of the prospects for the development of events in the second variant—in the event of a display of "sincerity" and "restraint" by the Soviet side—changes radically (see Table 2). The effectiveness of U.S. countermeasures is enhanced dramatically: They secure the realization of U.S. goals by 98 percent. The significance of measures regarded as ineffective in the first variant (securing no more than 35 percent realization in all) is also enhanced. In this case, there is virtually no need to escalate the crisis beyond the bounds of the measures already announced by the White House.

Some Conclusions

First of all, we will examine the causes of the crisis from the standpoint of this study. The American leadership's reaction to the actions of the USSR and Cuba obviously exceeded expectations. The policy of the USSR, as N.S. Khrushchev formulated it at the 22d CPSU Congress, was aimed at "curbing imperialism"¹⁴ and did not presuppose the infliction of serious injury on the United States. Nevertheless, two factors of danger—the nuclear potential of the USSR and chaos in the Third World—suddenly came together in September and October 1962 and disrupted President Kennedy's firm set of beliefs about the United States' ability to control the political situation in the world. It was precisely the combination of these two, previously separate factors and the realization that the very existence of the United States

depended on what the American leadership then perceived as a politically unstable situation in Cuba that were the causes of the President's "crisis" reaction.

This hypothesis is confirmed by the dramatic rise in the number of uncontrollable factors in the American leadership's perception of the situation. Sufficient proof of some basis for this alarm can be found in N.S. Khrushchev's speech of 12 December 1962, much of which was a stern condemnation of the leftwing extremist elements demanding the delivery of a strike against the United States.¹⁵

We know that "frustration"—the sudden collapse of expectations—can lead to acute crisis in everyday life and in international politics. Consequently, actions which might seem completely natural and possibly even rather unimportant to one side in the conflict can be exceptionally dangerous if they change the other side's view of the situation completely. Regrettably, there have been quite a few examples of this kind in our own policy (in particular, our actions in Afghanistan starting in 1979). The sense of a loss of control over the situation is dangerous to the side experiencing it and to the other parties involved.

The concept of interdependence "infiltrated" the political thinking of the American leadership precisely at a time of acute crisis. After the concept became an operational guideline (even if only with reservations and in

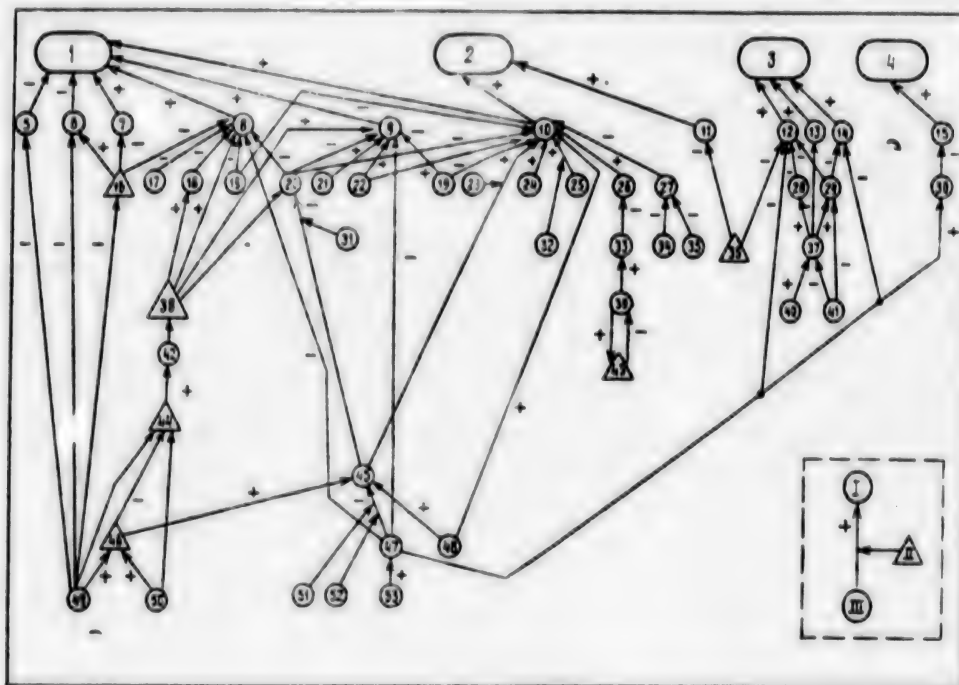


Diagram 1. Cognitive Chart Based on J.F. Kennedy's Televised Speech of 22 October 1962

incomplete and undeveloped form), it played a definite role in the peaceful settlement of the crisis.

The realization of the fact of interdependence led the American leadership of that time to an understanding of the fundamental importance of sincerity (its own and its partner's). Whereas the earlier insistence on the independence of the environment automatically led to a disregard for this feature ("whether the partner is sincere or not, my side is still stronger"), in the new state of interdependence sincerity began to be regarded as something like an important resource helping the sides attain certain objectives.

As we can see, many of the elements of the new political thinking—the interdependence of the world, the priority of averting nuclear war, and sincerity—were tested by the practice of policy in the dramatic atmosphere of the most acute crisis in relations between the United States and the USSR.

Today's politicians and researchers must do everything within their power to ensure that the stern but reassuring lessons of the Caribbean crisis are taken fully into account in political thinking and practice at the end of the 20th century.

Appendix

Key to cognitive chart: 1. U.S. interests; 2. USSR interests; 3. Cuban interests; 4. Latin American interests; 5. War between USSR and United States; 6. U.S. submission to USSR diktat; 7. U.S. protests; 8. U.S. security; 9. Security of Western Hemisphere; 10. Peace and security

of world community; 11. Security of Soviet specialists in Cuba; 12. Security of Cuban people; 13. Freedom of Cuba; 14. Welfare of Cuban people; 15. Security of Latin American people; 16. U.S. inaction; 17. Presence of Soviet ICBM's and SLBM's; 18. Possibility of complications, danger, and loss of life for people of United States; 19. Insincerity of Soviet leadership; 20. Use of nuclear weapons; 21. Defense of security of Western Hemisphere based on traditions and international law, namely:

Rio Pact,
traditions of Western Hemisphere,
87th Congress resolution,
UN Charter.

American warnings of 4 and 13 September;

22. Removal of nuclear weapons from Western Hemisphere; 23. Tactical-technical data of nuclear missiles; 24. Non-deployment of nuclear missiles outside USSR; 25. Removal of nuclear missiles from Cuban territory; 26. Talks between United States and USSR on broad range of issues, namely:

nuclear non-proliferation,
dismantling of military bases,
disarmament,
relaxation of tension,
future of Cuba.

27. Arms race; 28. Nuclear threat to Cuba; 29. Alienation of Cuba from Western Hemisphere; 30. Nuclear threat to Latin America; 31. Absence of threats to U.S. vital interests; 32. UN control; 33. Atmosphere of terror in U.S.-USSR relations; 34. USSR renunciation of hegemonism; 35. United effort by USSR and United States.

36. U.S. military strike against Cuba; 37. Domination of Cuba by USSR; 38. U.S. countermeasures.

The countermeasures are a group of U.S. actions depicted as a single entity on the chart. There are two important stipulations. First, to avoid the excessive complication of the chart, some of the countermeasures which could have been included in the causal list in principle were not. Second, the consequences of some countermeasures could have been included on the chart with their own separate relationships, but they were not. This applies, for example, to the element "shipments of vital necessities" in countermeasure 1, presented in the text as the following causal structure:

Customs inspections of all ships sailing to Cuba	-	Shipments of military cargo of vital necessities
---	---	---

It would be natural to connect this element with the element "interests of the Cuban people."

The following countermeasures are proposed:

1. Customs inspections of all ships sailing to Cuba; 2. Stronger surveillance; 3. Equation of any military use of missiles in Cuba with nuclear attack on United States; 4. Guantanamo training exercises; 5. Institution of inter-American security measures; 6. Convening of UN Security Council; 7. Contact with Khrushchev.

Besides this, there are reciprocal connections within the countermeasure framework. They can be illustrated easily as part of the cognitive chart:

Inadequacy of measures taken	+	Stricter quarantine
	+	Air Force preparations

These reciprocal connections cannot be included in the overall structure of the chart, however, because of the insufficient representational impact of cognitive charts.

39. Hostile actions by USSR anywhere, particularly in West Berlin; 40. Betrayal of Cuban leaders; 41. Cuban people's nationalist traditions and love of liberty; 42. Risk of nuclear world war; 43. Necessary U.S. countermeasures.

In contrast to element 38, the content of element 43 is abstract ("any necessary" countermeasures). The reflection of the connection between elements 38 and 43—i.e., the abstract relationship—is a clear example of an important task demanding cognitive charts with stronger representational properties.

44. Rash decisions; 45. Status quo; 46. U.S. restraint; 47. Transformation of Cuba into strategic base of the USSR;

48. USSR restraint; 49. U.S. traditions and institutions; 50. U.S. international influence and commitments; 51. Cuba's historical and geographical inclusion in Western Hemisphere; 52. Scales, speed, and secrecy of Soviet military construction in Cuba; 53. Soviet military construction in Cuba.

The speech also contains a clearly expressed general thesis reflected in the diagram in Roman numerals (see comments on element 43): I. War; II. Absence of opposition; III. Aggressive action.

Footnotes

1. M.S. Gorbachev, "Izbrannyye rechi i statyi" [Selected Speeches and Articles], vol 5, Moscow, 1988, p 285.

2. This is primarily a reference to the memoirs of R. Kennedy and the book by T. Sorensen: R. Kennedy, "Thirteen Days: A Memoir of the Cuban Missile Crisis," New York, 1969; R. Sorensen, "Kennedy," New York, 1965.

3. For the substantiation of this point of view, see G. von Bright, "Explanation and Comprehension," in G. von Bright, "Studies in the Philosophy of Logic. Selected Works," tr. fr. Engl., Moscow, 1986.

4. For a discussion of the use of simulation models in general methodology, see, for example, H. Simon, "Sciences of the Artificial," Moscow, 1972. For a discussion of simulation in the humanities, see A.S. Guseynova, Yu.N. Pavlovskiy, and V.A. Ustinov, "Opyt imitatsionnogo modelirovaniya istoricheskogo protsessa" [Experimental Simulation Models of the Historical Process], Moscow, 1984; E.V. Karakozova, "Modelirovaniye v obshchestvennykh naukakh" [Simulation Models in Social Sciences], Moscow, 1986; V.M. Sergeyev, "Cognitive Methods in Sociohistorical Research," in "Yazyk i modelirovaniye sotsialnogo vzaimodeystviya" [Language and the Simulation of Social Interaction], Moscow, 1987; P.B. Parshin and V.M. Sergeyev, "Ideas and Methods of Artificial Intelligence in the Study of Political Thinking," in "Politicheskiye nauki i NTR" [Political Science and the Technological Revolution], Moscow, 1987. For an example of the use of simulation models of the Caribbean crisis, see S. Thorson and D. Sylvan, "Counterfactuals and the Cuban Missile Crisis," INTERNATIONAL STUDIES QUARTERLY, December 1982, pp 539-571.

5. For a discussion of the techniques and procedures of this kind of analysis and a specific example—a study of Russo-German relations in the 1870's and 1880's, see V.P. Akimov and V.M. Sergeyev, "The Disclosure of Priorities Through the Analysis of Events Recorded in Texts," IZVESTIYA AN SSSR. SERIYA TEKH-NICHESKAYA KIBERNETIKA, 1987, No 2.

6. For a general discussion of cognitive charting, see "Structure of Decision," edited by R. Axelrod, Princeton, 1976; D. Heradstveit and O. Narvesen, "Psychological Limits of Decisionmaking. Analysis of Cognitive Approaches: Operational Code and Cognitive Chart," in "Yazyk i modelirovaniye sotsialnogo vzaimodeystviya." For a modified procedure, see V.B. Lukov and V.M. Sergeyev, "Experiment in Simulating the thinking of Historical Leaders: Otto von Bismarck, 1866-1876," in "Voprosy kibernetiki. Logika rassuzhdeniy i yeye modelirovaniye" [Topics in Cybernetics. Patterns of Logic and Their Simulation], edited by D.A. Pospelov, Moscow, 1983.

7. V.B. Lukov and V.M. Sergeyev, Op. cit.; idem, "Patterns of Crisis Thinking. An Analysis of Governing Circles in Germany," in "Managing International Crisis," edited by D. Frei, Beverly Hills, 1982.

8. The computer program was developed with the use of some elements of the approach known as "artificial intelligence." This presupposes the simulation of the intellectual operations involved in the human being's thinking processes.

9. "Mezhdunarodno-politicheskiye krizisy" [International Political Crises], edited by V.I. Gantman, Moscow, 1972; Anat. A. Gromyko, "1036 dney prezidenta Kennedy" [President Kennedy's 1,036 Days], Moscow, 1971; Anat. A. Gromyko and A.A. Kokoshin, "Bratya Kennedy" [The Kennedy Brothers], Moscow, 1985; R. Kennedy, Op. cit.; T. Sorensen, Op. cit.; A. Schlesinger, Jr., "A Thousand Days: John F. Kennedy in the White House," New York, 1965; G. Allison, "Essence of Decision. Explaining the Cuban Missile Crisis," Boston, 1971.

10. The strategic matrix is a table of priorities with a 2x2 format and reflects the relative preferability of strategies available to participants (conflict or cooperation). The matrices used in the analysis record not the specific advantages and disadvantages, but only the order (better-worse) of priorities. The relationship between preferences is assessed on an interval scale (1, 2, 3, 4).

11. If the United States chooses a conflict strategy, the USSR benefits from the choice of a cooperation strategy ($2 > 1$); if the United States chooses the cooperation strategy, the USSR also benefits from cooperation ($4 > 3$); but the conflict strategy is of greater benefit to the United States because it gets more in this case.

12. The name means "coward." It is taken from a game in which two drivers ride toward each other without stepping on the brake. The coward turns the steering wheel and saves the lives of the people in both cars but "loses face."

13. For the different patterns of political thinking discussed in this work, see V.B. Lukov and V.M. Sergeyev, Op. cit.

14. The "curbing" idea proposed by N.S. Khrushchev was analyzed in the report by V.M. Sergeyev and P.B. Parshin at the second Soviet-American seminar on interdependence in Tallin in January 1989.

15. PRAVDA, 13 December 1962.

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ECONOMIC SURVEYS

Continuing U.S. Economic Expansion Viewed

18030011d Moscow SSHA: EKONOMIKA, POLITIKA, IDEOLOGIYA in Russian No 5, May 89 (signed to press 17 Apr 89) pp 58-65

[Article by Nikolay Vyacheslavovich Volkov, doctor of economic sciences and sector head at Institute of U.S. and Canadian Studies, and Rufat Nadir-ogly Novruzov, institute senior lab assistant: "The United States: Sixth Year of Cyclical Prosperity"; first paragraph is SSHA: EKONOMIKA, POLITIKA, IDEOLOGIYA introduction]

[Text] The survey is based on data from: "Economic Report of the President, 1989," Washington, 1989; "Handbook of Economics and Statistics"; "Survey of Current Business"; OECD, "Main Economic Indicators" for corresponding years; OECD, ECONOMIC OUTLOOK, December 1988; DATA RESOURCES U.S. REVIEW, November 1988.

The stock market crash in New York in October 1987 quickly reinforced pessimistic feelings about the development of the American economy in 1988. For several months leading periodicals predicted the intensification of negative processes in the U.S. economy and in the world capitalist economy as a whole. They predicted an entire set of problems in the American economy: a severe cyclical crisis, the serious disruption of the existing financial system, an outbreak of trade wars, and the United States' complete loss of its status as the industrial leader of present-day capitalism.

Of course, it must be said that this outlook on the future of the American economy did not have a complete "monopoly." Many businessmen and economists (including the chairman of President Reagan's Council of Economic Advisers, B. Sprinkel) felt that although the crash was an extraordinary event, it was not directly connected with the nature of the reproduction process in the 1980's. In line with this, they concluded that the October crash would not have any significant negative effect on the American economy and that the period of cyclical prosperity would extend into 1988 and 1989.

Judging by the events of the past year, the optimists were much closer to the truth than their opponents were. Of course, neither could have foreseen that the United States would be stricken by a drought in summer 1988

and that it would reduce agricultural production substantially. In general, however, 1988 was probably the American economy's calmest year in the current economic cycle, the prosperity phase of which will probably pass the 6-year mark in the middle of this year.¹

In fact, the main macroeconomic indicators of American economic development were higher in 1988 than in 1987. The GNP was equivalent to 3.995 trillion dollars in constant 1982 prices. In other words, it was 3.8 percent greater than it had been the year before. In 1987 it had increased by 3.4 percent. The final sales of American companies rose by 3.7 percent, in comparison with 2.9 percent in 1987. The increase in industrial production was 5.7 percent (3.8 percent in 1987).

Furthermore, according to the estimates of the U.S. Department of Commerce, the GNP in 1988 lost around 17.3 billion dollars because of the perceptible reduction of production volume in agriculture (see Table 1) [table not reproduced]. The negative effects of the drought were particularly apparent in the fourth quarter, when the increase in goods and services was 1.25 percent below the projected annual figure.

In contrast to agriculture, industrial production developed without any serious snags in 1988. The quarterly increases in the industrial product were 4.0, 4.5, 7.1, and 4.1 percent. With the exception of the textile and extractive industries and part of metallurgy, production volume increased in all branches of American industry. The highest growth rates were in general and electrical machine building (11.9 percent and 4.8 percent respectively) and in the chemical, printing, food, and rubber industries—8.1, 6.3, 3.1, and 6.4 percent. The dynamics of production growth in the high-technology sectors of the processing industry in general—in contrast to 1987—far exceeded the indicators for its traditional branches.

The production of the overwhelming majority of final products for consumer and investment use continued to display steady growth in 1988. Short-term setbacks were recorded only in the automotive industry in the third quarter, the garment industry in the second, and the production of electrical appliances, air conditioners, and television sets in the first; there was a longer recession (second and third quarters) in the production of military goods. The situation in these industries, however, did not have any significant adverse effect on the growth of the total final product, which was measured at 5.3 percent for the year.

The dynamics of industrial production last year were connected with the livelier investment activity of American corporations. Their investments in the U.S. economy were 10.3 percent above the figure for the previous year (in constant 1982 prices), and most of the gain was invested in capital goods: They increased by

13.4 percent (2.6 times the 1987 figure), whereas investments in the construction of production facilities and residential buildings decreased by 0.6 percent and 1.6 percent.

The stepped-up growth of investments in capital goods reflects a general tendency toward the broad-scale modernization of the production system on a new technical basis. The extensive use of more effective tools of labor, securing the highly intensive use of productive forces, has enhanced the significance of such fixed assets as precision measuring instruments, electronic office equipment, and communication systems.

Under the influence of this process, investment in the traditional components of fixed capital decreased substantially in the 1980's. In 1988, however, investments in most of the traditional forms of production equipment began to increase, although at an unsteady pace (see Table 2) [not reproduced], and in the early 1990's they are expected to exceed the maximum figure recorded in the 1975-1982 economic cycle.

The lively corporate investment activity brought about a perceptible increase in the utilization volume of production capacities. At the end of 1988 factories in the processing industry were operating at 84.5 percent of capacity, which was the highest indicator of the last 9 years. Furthermore, this average indicator was surpassed considerably in such branches as the paper industry (94.8 percent), the primary processing of metals (94.2 percent), the chemical industry (89.1 percent), the textile industry (87.7 percent), rubber and plastics production (87.3 percent), the aerospace industry (85.9 percent), and the automotive industry (85.4 percent). According to a survey conducted by the National Association of Purchasing Management, 58 percent of the companies belonging to this association were using their production capacities by more than 90 percent at the end of 1988. This was the highest figure since May 1979.

A further increase in the load of capacities in American industry (corporate orders for investment and export-related commodities indicate that this possibility cannot be excluded) could lead to higher inflation. Past experience suggests that the rate of inflation begins climbing in the United States when industry is operating at 85 percent of capacity. This trend was already apparent in 1988, when the wholesale prices of semimanufactured goods began to creep upward as a result of a substantial increase in the load of capacities in branches producing the intermediate product.

Despite the slight rise in annual rates of increase in retail and wholesale prices in 1988 as compared with 1987 (from 3.7 to 4.1 percent and from 2.1 to 2.6 percent respectively), the dynamics of inflation in the American economy, measured with the GNP deflator, were ultimately the same as in the previous year—i.e., the rate did not exceed 3.3 percent. The administration and the Federal Reserve System (FRS) have been able thus far to control prices in the country. Their rate of increase has

not had a serious negative effect on the cyclical growth of the American economy. Financial agencies in the United States were able to prevent a dramatic increase in the amount of money in circulation in 1988 by keeping the rate within the FRS limits of 4-8 percent. The average annual rate of increase, calculated with the M2 indicator, was 5.1 percent in 1988 as compared with 4 percent in 1987.

The FRS' attempts to keep the economy from "overheating" by raising its discount rate were also intended to "beat down" inflation after the threat of its runaway growth became particularly apparent in the second half of 1988. This then raised the federal funds rate: The former was raised to 6.5 percent, and the average rate of the latter rose from 6.66 percent in the first quarter to 7.98 percent in the third. There was a corresponding change in the prime rate—the lending rate the largest private banks in the United States charge their preferred customers. It rose from 8.5 percent in the beginning of the year to 10.5 percent at the end.

The more stringent credit policy of the FRS and private banks reduced business inventories. This was first reflected in the substantial decline in the growth rate of the inventory of American companies: In the first quarter of 1988 it increased by 66 billion dollars (in absolute terms and in constant 1982 prices), but the figure in the fourth quarter was only 9 billion (according to preliminary estimates). In all, the increase in inventory was 4.1 percent for the year, whereas the total final sales of goods and services increased by 4.2 percent. As a result, one of the most important indicators of economic conditions—the ratio of inventory to sales—is now 1.51, which is far below the level characteristic of the start of a crisis of overproduction in the American economy (1.63-1.65).

The level of employment remained high in the United States throughout 1988. The number of employed people in the country rose 3.6 percent (2.8 percent in 1987). The high demand for labor, primarily in small and mid-sized firms in the service industries, reduced unemployment to 5.3 percent of the total labor force by the end of 1988, and led to an increase of 4.5 percent in the nominal wages of blue- and white-collar workers (3.8 percent in 1987) and of 3.5 percent in real disposable income (1.7 percent in 1987). Nevertheless, the rise of 1.4 percent in the average annual growth rate of labor productivity in the U.S. economy in 1988 as compared to 0.7 percent in 1987 led to a slight reduction in corporate wage expenditures, which increased by 3 percent last year (3.1 percent in 1987), just as in earlier years of the current economic cycle, and produced the most favorable indicator of unit labor costs among the leading capitalist states, allowing the U.S. corporations to retain their competitive edge in the world market.

The total increase in wages and personal income kept the growth rate of consumer spending at the 1987 level (2.8 percent). There were noticeable changes, however, in the patterns of spending: The highest rate of growth—4.4

percent in comparison to 1.5 percent a year earlier—was recorded in purchases of durable goods (mainly motor vehicles, furniture, and electrical appliances), whereas the increase in purchases of short-term goods and services declined by 0.5 and 0.8 percentage points respectively. Besides this, the personal savings rate rose from 3.3 percent in 1987 to 4.2 percent in 1988 despite the growth of consumer spending.

The most acute problem in the American economy is still the pronounced gap between government revenues and expenditures. In FY 1988, which ended on 30 September, the federal budget deficit was 155.1 billion dollars. According to administration forecasts, however, it was supposed to decrease to 146.7 billion dollars under the effects of the Gramm-Rudman-Hollings Act. The administration sees the reason for this discrepancy in the fact that wages paid to servicemen and unplanned losses amounting to 4.5 billion dollars and resulting from the 1986 tax reform were carried over a single day, into FY 1987. The growth of the absolute budget deficit in 1988, however, stayed far below the growth of the GNP, as a result of which its share of the GNP (3.2 percent) was also lower than in 1987 (3.3 percent) and was far below the indicator for 1986 (5.2 percent), the year of the record deficit.

On 9 January 1989 the Reagan administration published the draft federal budget for FY 1990. It estimates federal expenditures at 1.152 trillion dollars in FY 1990 as compared with 1.137 trillion in 1989, whereas federal revenues are estimated at 1.059 trillion dollars (976 billion in FY 1989). Therefore, the deficit in the U.S. federal budget should decrease, according to preliminary estimates, to 93 billion dollars in FY 1990, as compared to a projected 161 billion in 1989. If the new Republican administration is able to keep the growth of federal spending within these limits, the deficit in FY 1990 will be 7 billion dollars below the level envisaged in the Gramm-Rudman-Hollings Act, the main purpose of which, as we know, is a completely balanced federal budget in FY 1993, without resorting to publicly rejected measures such as tax hikes or cutbacks in social entitlement programs.

As soon as Reagan had submitted his draft budget to the Congress, however, G. Bush, the new President of the United States, said that he intended to reconsider several items within the near future. "The budget submitted by President Reagan," he said, "is an excellent budget. Naturally, I support his intentions, but I plan to review it with a view to possible changes after I take office." Even before Bush's official inauguration, however, the Democrats controlling both houses of Congress described the draft federal budget as the last will and testament of the Reagan administration. Influential Democratic Senator J. Sasser called the budget a program of mounting debt, continued reliance on foreign capital, and a constantly declining standard of living. It is the common opinion of the Democratic majority in Congress that it will be

extremely difficult for Bush to simultaneously reduce the budget deficit and keep his campaign promise not to raise taxes.

Expenditures on defense and interest payments on the federal debt were still among the largest expenditure items in the budgets for fiscal years 1988-1990. Although the rate of increase in U.S. military expenditure dropped to 3 percent in 1988 (and the draft budgets for fiscal years 1990 and 1991 put the rate at around 2 percent), absolute allocations for defense totaled 292.5 billion dollars in FY 1988, or almost 28 percent of all government expenditures. The administration has been particularly disturbed, however, by the rapid growth of interest payments on the federal debt, which have almost reached 2.8 trillion dollars. The payments increased by 9.3 billion dollars in 1987 and 1988 (from 138.5 billion to 147.8 billion), and by the end of FY 1990 they will rise another 22.4 billion dollars—i.e., they will reach 170.2 billion dollars. Around 11 percent of the federal debt was concentrated in the hands of foreign investors in 1988. This is 4 percent below the figure for the middle of the 1980's, which is the result, on the one hand, of the decline in the growth rate of foreign investment to 2.7 percent in 1988, as compared to 3.5 percent in 1987, and, on the other, of the increased acquisitions of profitable and government-secured American Treasury bills by U.S. companies and the American public.

The balance of trade and the balance of payments improved perceptibly last year. The substantial decline (of 50 percent in comparison with 1986) in the exchange rate of the dollar in relation to the currencies of the leading capitalist states, the enhanced competitiveness of American goods as a result of the radical reorganization of the production system by U.S. corporations in the 1980's, and the low prices of crude minerals and oil² helped to reduce the trade and payment deficits from 170.3 billion dollars and 154 billion dollars in 1987 to 134.6 billion and 136 billion respectively in 1988. The growth rate of American exports was much higher than the import growth indicator for the second year in a row. As then U.S. Secretary of Commerce W. Verity remarked in a speech in the middle of November, American exports increased by 29 percent and imports increased by only 9 percent in the first 9 months of 1988. According to the estimates of the Department of Commerce, there was also a sizable gap between U.S. export and import dynamics in 1989, which should reduce the trade deficit to 100 billion dollars. The continued existence of a large payment deficit, however, increased the net foreign debt to 500 billion dollars in 1989 as compared with 368.2 billion in 1987.

The rapid growth of U.S. exports was largely a result of the perceptible acceleration of the growth rates of industrial production in the West European countries and Japan in the last 2 years. The high demand for consumer and investment goods in 1987 and 1988 was covered to a considerable extent by American goods whose production costs and sale prices secured obvious competitive advantages for exporters. These advantages are attested

to by the negative value of the coefficient of U.S. export prices to import prices (or, more precisely, their growth indicators in relation to the base year). The average annual change in this coefficient was (-5.3 percent) in 1987 and (-0.3 percent) in 1988.

The Republican administration took advantage of the favorable foreign economic conditions to continue the persistent search for the optimal methods and means of government support for private corporations developing export production. In August 1988, for example, a comprehensive law on trade and competitiveness was passed in the United States to allow the administration to continue promoting the use of "free market relations" in the world capitalist economy. The law included several provisions calling for restrictive trade sanctions against foreign competitors using, or just capable of using, methods of "unfair" competition in trade with the United States. In 1988 Congress granted the President and the U.S. trade representative the right to impose sanctions in response to violations of the rules of "free trade" by the United States' trade partners. The law also expands the practice of purposeful government support of export-oriented branches and contains sweeping modifications of legislative standards protecting the rights of American companies to intellectual property (patents, copyrights, and trademarks). Several provisions are aimed at securing competitive advantages for American companies in trade with Japan (particularly trade in high-technology goods), reflecting the increased worries of Congress and the administration about the growing imbalance in trade with the second-ranking industrial power in the capitalist world.

The exclusion of Hong Kong, South Korea, Taiwan, and Singapore from the list of countries authorized to export their goods to the United States within the framework of the General System of Preferences on 2 January 1989 was an interesting aspect of the administration's legislative activity in the foreign trade sphere. In 1988 these new industrial countries (NIC's) in Asia accounted for around 70 percent of the goods exported to the United States on preferential terms and 13.7 percent of all American imports. The exclusion of these states and territories from the general system is the result, on the one hand, of the huge deficit (35.2 billion dollars in 1987) in U.S. trade with the Asian NIC's and, on the other, of the recognition of the latter as developed capitalist countries with the corresponding status in U.S. foreign trade.

The conclusion of the U.S.-Canadian agreement on the free flow of goods and capital between the two countries could also be included among the noteworthy events in American foreign trade in 1988. It will increase the interdependence of Canada and the northern industrial regions of the United States considerably, because it calls for the elimination of most tariff barriers in the next 10 years and will lift several other restrictions in the exchange of goods and services. In view of the fact that trade between the United States and Canada totaled around 150 billion dollars in 1987, there is good reason

to assume that the agreement will reduce the negative effects of market fluctuations in Western Europe and Japan on these two countries and will make them less vulnerable to any new outbreak of protectionism in the world capitalist economy.

Foreign investment in the U.S. economy displayed rapid growth in the 1980's. According to the Congressional Institute of Economic Management,³ which published a detailed report in August 1988 on foreign investment volume and its effects on the American economy, the volume was 1.536 trillion dollars at the beginning of last year. In other words, it increased by 207 percent between 1980 and 1988. This was much higher than the figure for U.S. investment abroad—92 percent (see Table 3) [not reproduced]. Most of the foreign capital investment in the United States consists of passive (portfolio) investments—i.e., investments in government securities, corporate stocks, and bank deposits. Direct capital investment, however, amounted to 262 billion dollars, and these investments have the most direct effect on the reproduction process in the U.S. economy. It is true that these investments were equivalent to just over one-third of total annual capital investments in the U.S. economy. The accumulated investments of foreigners have given them control of around 5-6 percent of U.S. national wealth. In some cases, however, the degree of foreign control is much higher. For example, one-fifth of all the overseas bank deposits of U.S. banks, and one-third in such large American financial centers as Los Angeles, belong to foreign investors.

According to preliminary data, in 1988 foreign investors accounted for around 20 percent of all transactions in the United States involving the acquisition of various types of property, which was four times as high as the 1987 figure. The most active countries in this sphere have been Great Britain, which had 74.9 billion dollars in accumulated direct investment in the United States by the beginning of 1988, Holland (47 billion), Japan (33.4 billion), Canada (21.7 billion), the FRG (19.6 billion), Switzerland (14.3 billion), and France (10.2 billion). These countries account for almost 85 percent of all foreign direct investment in the United States. According to the authors of the previously mentioned report, foreign investors "are more likely to decide that direct investment in the United States produces a more stable and frequently higher income than traditional investments in stocks and bonds." Besides this, "they regard their presence in the United States as a preventive measure against possible import barriers." The level of activity by foreign investors reflects the real effectiveness of the American economy today and its significance in the world capitalist economy as a whole.

These trends in American economic development in 1988 proved that the United States was able to neutralize the negative effects of the budget and trade deficits and the growing federal domestic and foreign debts on the reproduction process. In our opinion, there are still no solid grounds for the prediction of major crisis processes this year. The possibility that the economic boom in the

United States will continue cannot be excluded, although growth rates might be slightly lower than in 1988.¹

Footnotes

1. The post-crisis revival of economic activity began in November 1982, but the American economy entered a phase of prosperity at the end of the second quarter of 1983.
2. The price of oil in the world market fluctuated during the year, ranging from 10 dollars to 15.5 dollars a barrel, and in the United States the average price dropped from 15.5-16 dollars a barrel in the first half of the year to 14.3 dollars in the third quarter and 12.9 dollars in October.
3. A research organization which prepares reports on current economic issues for the American legislators.
4. In a survey of the comptrollers of 50 banks and consulting firms by BUSINESS WEEK, one of the most authoritative magazines of the U.S. business community, 34 percent of the respondents believed that the American economy will continue developing at the same pace in 1989 as in 1988; 42 percent predict growth of 2-3 percent; 26 percent predict a rate of 1-2 percent; and only 4 percent predict a growth rate of under 1 percent. The latter include J. Bradley from the PNC Financial Corporation and M. Kahan from Prudential Insurance (BUSINESS WEEK, 26 December 1988, p 51).

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SCIENCE AND TECHNOLOGY

Debates of Future of Space Program, Military Role Surveyed

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[Article by Grigoriy Sergeyevich Khozin, doctor of historical sciences and docent in School of Philosophy at Moscow State University imeni M.V. Lomonosov: "American Astronautics on the Threshold of the 1990's"; passages in boldface as published]

[Text] We are undertaking this analysis of the state of affairs in the American space program at the end of the turbulent 1980's, which have been filled with contradictory events on earth and in space. The new master of the White House is striving to sustain continuity in all of the main areas of the national space program. We should recall that one of the central points of Bush's campaign platform was the preservation of the "Strategic Defense Initiative" (SDI) as an essential element of U.S. "might" in the foreseeable future.

During his term in office, President Reagan took great interest in the development of the space program. On his personal initiative, many important steps were taken to

change the priorities, organizational structure, and financing of the U.S. space program, and the topic of space was used as an issue for political and ideological purposes. Reagan's presidential directive on national security issues of 4 July 1982, his notorious "Star Wars" speech of 23 March 1983, the reports of presidential commissions on various aspects of the present and future space program, and the legislative initiatives on the study and use of space offer sufficient proof that the Reagan administration assigned high priority to the space program. We feel it is also important that former NASA administrator W. Graham was appointed to succeed G. Keyworth as the President's science adviser. This demonstrated the need for the experience of the space agency in making U.S. policy on science and technology. Finally, on 18 November 1988, after the President had signed the bill on the NASA budget for FY 1989, he restored the White House National Space Council—an advisory body headed by the vice-president of the United States and responsible for the analysis of the political, military, economic, scientific, and other aspects of the space program (the council was dissolved by President Nixon in 1972).

There are several indications that a specific stage in the study and use of space is ending in the United States. Some foreign researchers divide American astronautics into periods corresponding to the different presidential administrations or sum up the results of calendar "space decades."¹ Without denying the validity of this approach, we must say that each new phase in the development of astronautics considerably augments the technical potential and possibilities for the practical use of space equipment, and this, in combination with changes in political and other conditions within states and in the international arena, is what makes each phase different and even unique in the history of astronautics. The decade of the 1980's has been this kind of period for the national space program.

In the 1980's the United States began using the space shuttles, and when the Challenger disaster occurred on the 25th flight of the shuttle program, it shut down the program of American manned space travel for several years. The President's decision to begin the work on the "Strategic Defense Initiative" in March 1983 and subsequent other actions by the administration and Defense Department radically changed the priorities of the space program, effectively throttling many other important fields in the practical use of space equipment for scientific purposes (some projects for the study of planets and distant space were cancelled or postponed). The Republican administration decided not to renew the Soviet-American agreement on cooperation in the study and use of outer space for another 5 years when it expired in May 1982.² The United States simultaneously took far-reaching legislative and organizational measures to facilitate and stimulate activity by the private business sector in the development and autonomous operation of spacecraft and other systems for practical purposes.

The Republican administration, and President Reagan in particular, not only made a great effort to secure the dynamic development of the technical potential of American astronautics but also made vigorous use of space-related issues for propaganda purposes. It must be said that the ideological declarations addressed to the American and world public made frequent references to American astronautics to focus attention on the "American dream." Here, for example, is what President Reagan said in connection with the decision to establish a permanent manned space station in the 1990's: "Our ability to take up the space challenge will show whether the men and women of America can display the same daring insight, courage, and strength of will that made us a great nation.... We can follow our dreams to the distant stars and begin living and working in space for peaceful economic and scientific achievements."³

Clarification of Priorities

The presidential directive on national space policy says that "the most important goals of space activity the reinforcement of U.S. security; activity in space to secure scientific, technical and economic advantages for the general public and to improve the quality of life on earth; the stimulation of new private investment in space and related activity; the promotion of international cooperation with a view to U.S. national security, foreign policy, and economic interests; interaction with other countries to keep space free for all types of activity enhancing the security and welfare of mankind; and, as a long-range goal, human activity and presence on a broader scale beyond low orbits in the solar system."⁴

The different space projects that might have become part of the national space program after winning presidential and congressional approval began to be analyzed long before the organizational structure and legislative bases of this program were established. One of the latest analytical forecasts of this kind to have broad repercussions in the United States and other countries was the report by the President's National Commission on Space, "Pioneering the Space Frontier," published in the middle of 1986.⁵ This report was supposed to be a general agenda for the development of American astronautics in the next 50 years and a description of general trends in world astronautics, but it was also supposed to present the philosophical doctrine of American enterprise to the "rest of the world."

The publication of the report led to active efforts by federal and scientific organizations to clarify the long-range priorities of the space program, modify it, and propose more suitable arguments in favor of broader scientific and commercial activity in space. The reports and surveys they submitted reflect the scientific theories and technical trends constituting the basis on which the official space policy approved by the President of the United States will be carried out. "Leadership and America's Future in Space," a report submitted to the NASA administrator in August 1987 by Doctor S. Ride, the woman astronaut, warrants special discussion.

The report is prefaced by the statement that "the U.S. civilian space program is now at a crossroads, preparing to move toward the frontiers specified by the National Commission on Space, but simultaneously aware of the facts the Rogers Commission (the group investigating the causes of the Challenger disaster—G.Kh.) discovered. NASA needs to make a bold response to both of these challenges without losing sight of the need to conduct a balanced space program while keeping financing within reasonable limits."⁶ It must be said that the increased criticism of NASA and the greater interest in the future of American space travel are partly the result of the emotional trauma the administration, the scientific and industrial communities, and the general public suffered at the time of the Challenger disaster— unquestionably the most serious accident, although not the only one, in the history of the U.S. space program. It became the point of departure, however, for discussions of the future of national astronautics, and although the circumstances of the accident and its effects on the development of manned space travel have been investigated in depth and in great detail in the United States,⁷ experts still cannot agree on the most promising areas of American space exploration.

The main targets of criticism were NASA and, to a lesser degree, the administration and Congress, which, according to former NASA administrator T. Paine, caused the U.S. space program to "lose its sense of purpose." It was NASA, however, that submitted the draft program detailing all of the specific actions (in the form of space projects, with their schedules outlined) that would secure a position of leadership for the United States in the study and use of outer space. The report by S. Ride clarifies the very concept of leadership in space with a view to specific development projects and the practical use of the potential of space equipment. The first, research stage is connected with the initial penetration of a particular zone in outer space for scientific and practical purposes. The second stage will entail the expansion of various types of activity there and the performance of increasingly complex tasks by space systems. The third stage is connected with the daily use of the space systems, and the fourth envisages profitable activity in space (these stages are marked with the Roman numerals I-IV in the table). The report also stipulated the particular regions of outer space to be explored for the guaranteed retention of U.S. leadership in space. Distant space is outside the solar system. The outer solar system includes the planets located beyond the asteroid belt, and the inner zone includes the planets located within this belt, the moon, and the sun.

Space Projects Expected To Secure U.S. Leadership in Space in the Second Half of the 1990's and the Beginning of the 21st Century

Space zones	Stages in guarantee of leadership			
	I	II	III	IV
Distant space	Star probe	Lunar observatory		
Outer solar system	Neptune probe	"Cassini" project (Saturn and Titan probe)		
Inner solar system	Delivery of Martian soil samples to Earth; Mars mission	Lunar probes; lunar scientific center	Permanent lunar base	
High earth orbit	Large installations in space	Space systems maintained by robots	Spacecraft for inter-orbital operations	Satellites for collection and transmission of solar energy to Earth
Low earth orbit	Large space system with artificial gravity	Orbiting platforms for Earth observations	Assembly of large structures in orbit	Materials production in space
Technical and transport support systems	National aerospace plane	Space Shuttle-II (for heavier payloads)	Systems securing reliable access to space and return to Earth	Commercial rockets designed and operated by private corporations

Compiled with data from "Leadership and America's Future in Space," p 17.

The report stresses that not all of these projects will be carried out in the next few decades and that only a few states can expect to develop the kind of space equipment that will allow them to begin economically profitable activity in the outer solar system. The author tries not to draw attention to the United States' real intentions by saying that "if several countries choose the same goals...they can either cooperate or compete; if one state begins working in a specific area (deciding to explore a particular zone in space on its own),

however, it will achieve indisputable leadership."⁸ The main thing, however, is that the United States must stay well ahead of other countries in its progression from one logical stage of space exploration to the next. Although Ride questions some of the conclusions of the National Commission on Space, her report is entirely pragmatic in outlook. All of the proposed "strategies" for the further development of the U.S. civilian space program up to the beginning of the next century are explained clearly and conclusively with a

view to NASA's present and projected capabilities, but one section of the report ends with the statement that "there is no single 'right' strategy; on the contrary, there are several clearly defined strategies (for the future)."⁹

The report mentions the Pathfinder project, which is supposed to establish something like a "launch pad" in space, from which astronauts can take off for the Moon and Mars. In contrast to most projects, Pathfinder does not have the goal of creating a specific type of space system to connect a mother ship with a manned or unmanned rover for the performance of scientific or practical tasks, but of developing the equipment to conduct many bold experiments beyond low orbits: technical equipment for autonomous space systems and automated robots, better propulsion systems for flights to the Moon and the planets, and equipment for the extraction of raw materials there. This project will enhance man's ability to live and work in space through the development of life-support systems for manned spacecraft and the improvement of the means and methods of man's interaction with technical systems in flight.¹⁰

The NASA leadership believes that the "exciting" projects involving manned flights to the Moon, the establishment of a permanent lunar outpost, where experts in various fields will work, and the Mars mission can be carried out 10 or 20 years after the start of work on projects like Pathfinder.

The general purpose of Pathfinder and of another similar project, Pacer, planned by the NASA Office of Space Science and Applications for the purpose of "studying the psychological and medical consequences of long-term (manned) spaceflight," indicates that the American civilian space agency is inclined to follow a "philosophy of scientific and technical stockpiling," which we feel was reflected clearly in the "Strategic Defense Initiative." This project, the biggest military-applied research project in the history of the United States, was aimed less at the development of weapons systems with space-based elements in the future, with their combat properties defined in advance, than at a search for scientific discoveries and technological innovations that might serve as the technical basis for the enhancement of U.S. military potential and the guarantee of other unilateral advantages.

The report of the National Commission on Space also discusses the expediency of combining the search for advanced equipment and technology with the traditional type of NASA project involving manned or unmanned spacecraft.¹¹ Recently published documents discussing the prospects for the development of new types of space equipment, the priorities of the study of Earth from space and of outer space and the planets of the solar system, and the major plans for the practical use of space systems indicate that the civilian space program in the United States is on the threshold of a new phase of changes. It will be connected with the improvement of its

organizational structure, administrative methods, and economic incentives. The documents published to date, however, mention only the general guidelines for the reorganization. Specific steps in this sphere will be taken by the new administration.

The Pathfinder project is only one of the five main components of NASA's comprehensive program for the development of advanced space equipment. According to AVIATION WEEK AND SPACE TECHNOLOGY, expenditures on the program will reach 1.7 billion dollars by the end of 1992. In addition to the Pathfinder project, it includes a "civilian space technology initiative," engineering studies, the development of space equipment, flight tests of the space shuttle and orbiting station, and in-space experiments planned by NASA research centers.¹²

The prospects for civilian astronautics in the United States can only be judged in their entirety with a view to the possibility and specific terms of participation by the private business sector, which has been much more active in the design, production, and use of individual types of space equipment and whole systems in recent years. "By making use of the private sector's exceptional ability to put innovations to work, we can strengthen America's leadership in space," President Reagan said.¹³ He listed the following three essential features of the "commercial initiative": the promotion of the extensive "presence" of private business in space for the establishment of an extra-terrestrial research and production infrastructure; the development of "highways to space" by creating the potential for privately managed rockets; the establishment of the technical foundation and qualified staff of experts by training students to take part in the space program.

On 20 August 1988 President Reagan signed a bill on funding for the "Freedom" orbiting station and the shuttle flights that came to an end in January 1986. America is returning to manned space travel. Now, however, closer cooperation will be organized in this field. As a State Department spokesman said at a special briefing on 27 September, the participation of Canada, Japan, and West European states in project Freedom, the initial cost of which has been estimated at 23 billion dollars, will be quite apparent.

In the near future, the U.S. space program will be carried out, as it was earlier, through the joint efforts of government agencies and private corporations, but the degree of government regulation of corporate activity will be reduced significantly by several of the Reagan administration's legislative acts. This will broaden the scales and heighten the autonomy of the private sector's participation in the development and commercial use of applied space systems.

New Forms and Methods of Management

In spite of the pointed criticism of the NASA leadership, the administration decided to retain this federal agency but to also give serious consideration to changes in its

organizational structure and in the oversight of its activity by the administration and Congress. Some American newspapers, however, accused the NASA leadership of deliberately misusing funds, abusing office, and deceiving auditors. According to THE LOS ANGELES TIMES, auditors have documented evidence of NASA overexpenditures of more than 3.5 billion dollars in the 1970's and 1980's, but they believe that this figure is far from the truth. "This is only the tip of the iceberg." Following the bad example set by the Defense Department, NASA paid 120 dollars for clamps worth 3.28 dollars, 315 dollars for metal loops worth 3 cents, and 1,621 dollars for bolts worth 78 dollars. The only item for which a savings of 68 million dollars was recorded was the testing of solid-propellant boosters for the space shuttle when these tests were cancelled.¹⁵

When TIME magazine listed the critical problems of the American space program in an issue marking the 30th anniversary of the Soviet launching of the first artificial satellite in history, most of them were directly related to the effectiveness of political oversight and methods of management: "Should the United States concentrate on the Strategic Defense Initiative, as President Reagan and the Pentagon urge, or should it preserve its traditional commitment to the peaceful exploration of space, perhaps in cooperation with other countries, including the Soviet Union? ...Should NASA organize commercial uses of space, as the governments of foreign nations are doing, or should that be left to private business, as the White House insists? Should the purposes of NASA, which one expert called an 'agency demoralized...and without direction,' be redefined? In an era of multibillion-dollar deficits, what price is the United States prepared to pay to regain its pre-eminence in space?"¹⁵

The presidential directive on national space policy says that the analysis of the views of federal agencies, the examination of proposed and recommended changes in national space policy, and the submission of necessary reports to the President were the job of the Inter-Agency Group for Space, headed by the chairman of the National Security Council. The members of the group included representatives from the State, Defense, Commerce, and Transportation departments, the CIA, the Joint Chiefs of Staff, the Arms Control and Disarmament Agency, the Office of Management and Budget, and the Office of Science and Technology Policy. Now these functions will be performed by the National Space Council.

In January 1988 Congressman R. Torricelli (Democrat, New Jersey) introduced a bill on behalf of the Committee on Science and Technology and the Committee on Foreign Affairs, proposing the creation of a national commission on Mars for other purposes. The commission should "map out a strategy for Soviet-U.S. cooperation in the study of Mars with space probes as the first step toward a joint manned flight; map out the strategy for the kind of cooperation that would preclude undesirable technology transfers (to the Soviet Union—G.Kh.);

draw up a detailed proposal regarding a joint Soviet-American mission to Mars."¹⁶ The bill, which is still being debated, says that a manned flight to Mars would be the logical step following past and projected launches of unmanned spacecraft and that it would promote continued activity in space by many countries and demonstrate man's tremendous potential to tame the universe. It also stresses that a joint Soviet-American manned flight to Mars will strengthen the spirit of cooperation between the two states in space and allow each of them to save tens of billions of dollars. Within 6 months after its establishment, the commission will be expected to submit a detailed report to the President and Congress. The bill says that this report should amplify and clarify the statements in the reports by S. Ride and the National Commission on Space in reference to a manned mission to Mars and present the initial data for detailed plans of the mission.

These steps to improve the organizational forms and methods of the management of the U.S. space program followed similar steps by the Defense Department, the main one of which was the creation of the specialized agency known as the Strategic Defense Initiative Organization (SDIO). In our opinion, these measures were supposed to bring the management mechanism in line with the technical potential for American space exploration in the near future. The creation of this potential had already begun. This potential will be more diversified in terms of the variety of spacecraft, the complexity of their structure, and the functions they will perform. For example, in addition to resuming the shuttle flights, NASA began working on a permanent orbiting station. NASA is working with the Defense Department on the national aerospace plane project (X-30). The "family" of expendable rockets is being improved and will loft payloads into geosynchronous orbits as high as 36,000 kilometers. They include the Titan 2, Titan 4 (the latter is capable of lofting payloads of up to 4.5 tons into geosynchronous orbits), the Delta 2, and NASA's "old" Atlas and Scout rockets. Besides this, the U.S. Air Force is developing an advanced rocket to carry heavier payloads and plans to begin using it in the second half of the 1990's.¹⁷ Experts predict that the rockets designed and used by private corporations to launch commercial satellites will also augment the potential for the delivery of payloads to space.

At the end of December 1988 NASA published another document on long-range plans for the study of the solar system. THE NEW YORK TIMES had this to say about the document: "People will be able to travel through the solar system soon after the beginning of the next century and they might be able to establish a permanent outpost on the Moon and even fly to Mars if they make fairly modest investments in the development of new (space—G.Kh.) equipment and the planning of this activity in the near future."¹⁸

The future of American space exploration is still being debated. We will mention just a few of the issues we regard as the most interesting and the most deserving of

special discussion in this journal. The first concerns the profitability of the shuttles in comparison with expendable carriers (this question has also been raised by the Soviet public in connection with the scheduled start-up of the Energiya-Buran system). The American press has reported that it cost from 2,000 to 4,000 dollars a pound to loft a payload into orbit in the second half of the 1980's, and this costs more than the use of existing expendable rockets.¹⁹ The authors of "Pioneering the Space Frontier" believe that launch costs can be reduced to 200 dollars a pound (in 1986 prices) by the year 2000.²⁰ Later estimates, however, indicate that this goal is unlikely to be attained by that time: Even the most conservative estimates put the damages caused by the Challenger disaster at 10 billion dollars, and experts from the Congressional Office of Technology Assessment estimate the cost of creating sufficient shuttle and expendable rocket potential to meet the needs of the U.S. space program in coming decades at 110 billion dollars.²¹

Second, at a time when more and more politicians, scientists, and public spokesmen are advocating wide-ranging international cooperation in the study and use of space, military-applied space projects of any scale or purpose are more likely to be criticized.

"America's Pride: The Journey Continues"—this was the slogan of the preparations for the resumption of manned flights. On 4 October the spacecraft "Discovery" landed at Edwards Air Force Base in California. George Bush, who was then still the vice-president, welcomed the five astronauts and stressed that manned flights would be part of the regular schedule from now on. The next flight, however, by the shuttle "Atlantis," which took place in the beginning of December 1988 and lasted 107 hours and 4 minutes, was completely under Pentagon control. American researcher A. Clouman feels that "the plans for the early deployment of SDI and ASAT systems are coming into conflict with another goal of the Republican administration—the promotion of commercial space projects.... As long as the military space program continues to grow (and if the scenario of the early deployment of the SDI should be chosen, allocations for this purpose will increase dramatically), the forecast for civilian space budget growth will be extremely cloudy."²²

Finally, just as after the Apollo disaster, when three astronauts died during ground tests on 27 January 1967, and during other critical periods in the development of the U.S. space program, the contribution of astronautics to the development of science and technology has been the subject of lively debate. The points of view expressed in these debates are similar in some respects to the arguments cited by some mass news organs in the Soviet Union in favor of a more scrupulous analysis of the priorities of Soviet astronautics. People are asking whether the scientific and technical potential, production capacities, laboratories, and skilled specialists now engaged in the work on the SDI and other military space projects might be used to solve urgent problems in U.S.

domestic and foreign policy. Various procedures and methods of converting these infrastructures to serve the interests of the civilian economy are being suggested.²³ In our opinion, the possibilities for the use of the scientific, technical, and economic potential created during the process of completed and ongoing military space projects require more thorough analysis.

Footnotes

1. For a more detailed discussion, see G.S. Khozin, "SShA: kosmos i politika" [United States: Space and Politics], Moscow, 1987, pp 34-51—Ed.
2. A new USSR-U.S. agreement on cooperation in the study and use of outer space for peaceful purposes was signed on 15 April 1987 in Moscow by USSR Minister of Foreign Affairs E.A. Shevardnadze and U.S. Secretary of State G. Shultz. It envisages work on 16 specific projects. In May 1988 representatives from the Space Research Institute and NASA signed two protocols in Washington to expand the cooperation framework stipulated in the agreement on the joint working groups on solar physics and on space astronomy and astrophysics. Soviet-American cooperation in other fields of space research is also being expanded.
3. "The Next Logical Step," NASA, 1987, pp 2-3.
4. "Fact Sheet. Presidential Directive on National Space Policy," The White House, Office of Press Secretary, 11 February 1988, p 1.
5. This report was analyzed in V.T. Khorkov's article "The Future of Astronautics: The American Model," SSHA: EKONOMIKA, POLITIKA, IDEOLOGIYA, 1987, No 10, pp 93-98.
6. "Leadership and America's Future in Space," NASA, Washington, August 1987, p 5.
7. In addition to the report of the Rogers Commission, other works also analyzed the causes of the Challenger disaster: M. McConnell, "Challenger. A Major Malfunction," New York, 1987; J. Trento, "Prescription for Disaster," New York, 1987; P. Bond, "Heroes in Space. From Gagarin to Challenger," New York, 1987.
8. "Leadership and America's Future in Space," p 17.
9. Ibid., p 18.
10. Ibid., p 40.
11. "Pioneering the Space Frontier. The Report of the National Commission on Space," New York, 1986, p 146.
12. AVIATION WEEK AND SPACE TECHNOLOGY, 26 October 1987, p 29.
13. Ibid., 1 February 1988, p 24.
14. THE LOS ANGELES TIMES, 28 April 1986.
15. TIME, 5 October 1987, p 40.

16. CONGRESSIONAL RECORD, 25 January 1988, p H3.

17. AVIATION WEEK AND SPACE TECHNOLOGY, 1 February 1988, pp 36-38.

18. THE NEW YORK TIMES, 20 December 1988.

19. NEWSWEEK, 10 February 1986, p 21; AVIATION WEEK AND SPACE TECHNOLOGY, 24 March 1986, p 24.

20. "Pioneering the Space Frontier," p 109.

21. THE WASHINGTON POST, 25 September 1988. The economic aspects of American space travel will be discussed in a separate article.

22. SPACE POLICY, February 1988, p 11.

23. See, for example, J. Kidd, "The Strategic Cooperation Initiative," Charlottesville (Va.), 1988, pp 77-114.

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[Text]

January

1—The New Year's messages of General Secretary of the CPSU Central Committee and Chairman of the USSR Supreme Soviet Presidium M.S. Gorbachev to the American people and of President R. Reagan to the Soviet people were published.

3—Chairman V.A. Kryuchkov of the Committee for State Security received U.S. Ambassador to the USSR J. Matlock at his request.

4—Ronald Reagan announced the United States' consent to take part in an international conference on human rights in Moscow in 1991. President-elect G. Bush supported Reagan's decision.

8—Member of the CPSU Central Committee Politburo and USSR Minister of Foreign Affairs E.A. Shevardnadze and U.S. Secretary of State G. Shultz signed an agreement on USSR-U.S. cooperation in basic research and a memorandum on mutual understanding and cooperation in the fight against the illegal drug trade when they were in Paris to attend an international conference on chemical weapons.

15—A final document was adopted in Vienna by a consensus of all the participants in the Helsinki process. The document refers specifically to the decision to begin talks by 23 Warsaw Pact and NATO states on armed forces and conventional arms from the Atlantic to the

Urals in March 1989. Talks by 35 CSCE states on further security and confidence-building measures in Europe will begin at the same time.

17—M.S. Gorbachev received a prominent American politician, former U.S. Secretary of State H. Kissinger.

First Deputy Chairman of the USSR Council of Ministers and Chairman of the USSR State Agroindustrial Committee V.S. Murakhovskiy received a prominent American political and public figure, Chairman D. Rockefeller of the North American group of the Trilateral Commission.

18—During a meeting with members of the Trilateral Commission, M.S. Gorbachev said that the scheduled reduction of the armed forces of the USSR would reduce their number by 12 percent. There will be a reduction of 14.2 percent in the military budget and of 19.5 percent in arms and materiel production. In the next 2 years the Army and Navy will be reduced by 500,000 men: 240,000 in the European part of the country, 200,000 in the east, and 60,000 in the south.

20—M.S. Gorbachev congratulated G. Bush on his inauguration as president of the United States of America.

20-21—A 2-day American-Soviet economic conference on "Peace Through Trade, Investment and Development" was held in UN headquarters in New York.

23—During a telephone conversation with M.S. Gorbachev, President G. Bush of the United States thanked him for his message of congratulations and said that he would continue striving for broader cooperation and stronger mutual understanding for the good of the two countries and the entire world community. In response, M.S. Gorbachev said that the Soviet leadership attaches great importance to Soviet-American relations and that the President could rely on its willingness to continue the joint search for the means of their further improvement.

25—Member of the Politburo and Secretary of the CPSU Central Committee A.N. Yakovlev received Professor S. Bialer, director of the Columbia University Institute of International Change (United States).

26—A collective work by Soviet and U.S. scholars, "From Cold War to Peaceful Competition and Cooperation in Soviet-American Relations," was exhibited in the press room of the USSR Ministry of Foreign Affairs.

27-28—A Soviet-American-Cuban symposium on the 1962 Caribbean crisis was held in Moscow. The participants issued a joint statement. M.S. Gorbachev and G. Bush sent messages to the symposium.

31—A.N. Yakovlev had a meeting with one of the leaders of the Democratic Party in the United States, J. Jackson, who informed him of his plans to organize a series of benefit concerts by American and Soviet performers to aid the victims of the earthquake in Armenia. A.N. Yakovlev thanked Jackson for his contribution to this noble cause.

February

1—First Secretary of the Central Committee of the Communist Party of Armenia S.G. Arutyunyan received J. Jackson in Yerevan.

9—Representatives of the U.S. and USSR public met in Moscow to discuss "The Soviet-American Response to International Terrorism." A Soviet-American association was established to consider ways of preventing and combating terrorism.

12—Documents were signed in Moscow on the establishment of joint enterprises, the co-founders of which are the Moscow Stas Namin Music Center, the American Berardi/Thomas Entertainment and Impact Productions firms, and the British music magazine METAL HAMMER. The joint enterprises are being established to encourage and expand international cooperation in the cultural sphere.

13—E.A. Shevardnadze received a visitor in Moscow—President E. Bronfman of the World Jewish Congress, a prominent member of the U.S. business community and the head of the Seagram corporation.

16—A published Soviet government statement said: "The Soviet Union reaffirms its proposal on an immediate cease-fire between warring factions in Afghanistan and the simultaneous curtailment of arms shipments to Afghanistan by all countries, including the USSR and the United States."

21—A benefit concert was held in New York's Carnegie Hall, with all of the proceeds—350,000 dollars—to be donated to the victims of the earthquake in Armenia.

23—The U.S. Senate passed a resolution on aid to Soviet Armenia, in line with which Secretary of State J. Baker must submit a report to Congress by 1 April on the scales of American aid to the earthquake victims. The Senate also asked the secretary of state to consider the creation of a group of government experts and specialists from private organizations to assist in long-term restoration projects in Armenia.

24—The Pepsico corporation announced that its Pizza Hut restaurants would be opened in Moscow in the next 12 months. The new public catering centers will operate as a Soviet-American joint venture. Pepsico will make an initial contribution of around 2 million dollars.

25—Another nuclear test (the second officially announced one) with a force of around 20 kilotons was conducted in the United States.

28—Representatives of Christian churches in the Soviet Union and the National Council of Churches of Christ in the United States drafted a program of cooperation in the next 5 years at a meeting in Moscow.

March

2—A Russian translation of President G. Bush's book "Looking Ahead," published by the Progress Publishing House, was exhibited in the press room of the USSR Ministry of Foreign Affairs.

6—A 3-day meeting of the foreign ministers of 33 states in Europe and of the United States and Canada began in the Hofburg palace in Vienna. It marked the beginning of the talks on conventional armed forces in Europe and the talks on security and confidence-building measures.

7—E.A. Shevardnadze's first official meeting with J. Baker, the new U.S. administration's secretary of state, took place in Vienna.

6-8—The National Education Association of the United States welcomed a delegation of educators from the USSR to a 3-day conference in San Diego (California).

11—Corresponding member of the USSR Academy of Sciences A.A. Kokoshin addressed the Armed Services Committee of the House of Representatives of the U.S. Congress. This was the first time in history that a Soviet citizen addressed a U.S. congressional committee.

12—A Soviet government statement on the situation in Afghanistan was published. It said that the USSR, as one of the guarantors of the Geneva accords, requests the "secretary-general of the United Nations, under whose auspices the Geneva agreements were concluded, and the United States, which signed the Declaration of International Guarantees, to take immediate and effective steps to put an end to foreign intervention in Afghanistan."

13—A.N. Yakovlev received Chairman of the Board P. Morris of the American VMC Corporation and Chairman of the Board B. Bernstein of the Canadian Seabeco Group in connection with the signing of an agreement to establish a joint enterprise for the construction of an international drama center in Moscow.

15—A meeting with American high-school students in the Soviet Union in line with the agreement between the State Committee of the USSR for Public Education and an American student exchange organization was held in the CPSU Central Committee.

22—The U.S. State Department announced the decision to expel S.V. Malinin, an employee of the Amtorg Soviet-American trade organization in New York, and his family from the country. The official State Department spokesman did not conceal the fact that this was a response to the expulsion of Lt-Col D. Van Gundy, aide to the American military attache in Moscow, from the USSR last week after he was declared persona non grata for using his diplomatic status to engage in unlawful activity in the USSR.

28—A Soviet documentary film festival in Washington, to which 22 works of the last few years had been

submitted, began with the premiere of the film "Chernobyl. A Chronicle of the Trying Weeks." The films will be shown in 19 U.S. cities.

30—Chairman of the USSR Council of Ministers N.I. Ryzhkov received executives of the American Trade Consortium (ATC), set up in the United States by several large companies to develop trade and economic contacts with the USSR.

The ceremonial signing of a general trade agreement between the Soviet Foreign Economic Consortium and the ATC took place that same day. The document will regulate economic, legal, financial, and other aspects of the activity of the consortiums and their joint ventures in the USSR.

E.A. Shevardnadze received J. Joyce, temporary U.S. charge d'affaires in Moscow. The American representative delivered a personal message from President G. Bush of the United States to General Secretary of the CPSU Central Committee and Chairman of the USSR Supreme Soviet Presidium M.S. Gorbachev.

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